PERCEPTIONS OF AN ALTERNATIVE MODEL FOR
THE VOCATIONAL EDUCATION PROGRAM AT
SECONDARY COMPREHENSIVE SCHOOLS
IN TRINIDAD AND TOBAGO

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Jason F. Hernandez, B.S., M.S.
Denton, Texas
May, 1992
PERCEPTIONS OF AN ALTERNATIVE MODEL FOR
THE VOCATIONAL EDUCATION PROGRAM AT
SECONDARY COMPREHENSIVE SCHOOLS
IN TRINIDAD AND TOBAGO

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Jason F. Hernandez, B.S., M.S.
Denton, Texas
May, 1992
Hernandez, Jason F., Perceptions of an Alternative Model for the Vocational Education Program at Secondary Comprehensive Schools in Trinidad and Tobago. Doctor of Philosophy (Vocational Technical Education), May, 1992, 173 pp., 31 tables, 3 illustrations, references, 44 titles.

This study was designed to compare perceptions of an alternative model for the vocational education program at secondary comprehensive schools in Trinidad and Tobago. The groups compared were vocational education teachers, academic teachers of related subjects, secondary comprehensive principals and vice principals, and vocational education curriculum supervisors.

A survey instrument was developed and was tested to ensure its validity and reliability. The instrument utilized a seven-point Likert-type scale to measure the intensity of agreement or disagreement. The items related to the proposed model were subdivided into administration and planning, curriculum and instruction, and evaluation components.

One-way analysis of variance, multivariate analysis of variance using the Wilk’s Lambda criterion, and t-tests were used to test for significant differences in perceptions among the groups. Significant differences in perceptions
were found among the groups on four of the items within the model. All groups expressed positive perceptions of the three components within the model. When compared by teaching discipline, home economics teachers expressed a significantly more positive perception of the evaluation component than did trade and industry teachers. No significant difference in perceptions was found when vocational education teachers were categorized by ranges of industrial and business experience or when all teachers were categorized according to ranges of teaching experience. When all groups were combined, respondents in the highest age range were found to have significantly more positive perceptions of the proposed model than did respondents in the lowest age range.

The findings of this study revealed that all groups perceived the alternative model proposed in this study in a positive manner. Vocational education curriculum supervisors were the most receptive group, followed by school administrators and teachers, respectively.
ACKNOWLEDGMENTS

Grateful appreciation is extended to the following persons, whose guidance, assistance, and support, made possible the successful completion of this study:

Dr. Roger Ditzenberger, my major advisor, and Chairman of the Vocational Technical Education Department, University of North Texas.

Dr. William Brookshire, Dr. Michael Kozak, and Dr. Barry Lumsden, members of the advisory committee.

Jocelyn Greaves who coordinated the distribution and retrieval of the survey instrument.

Staff members at San Juan Senior Comprehensive School who assisted with the distribution and retrieval of the survey instrument.

Robert Mount whose assistance and motivation were invaluable.

Finally, I wish to thank my wife Marjorie who was understanding and supportive throughout the entire exercise.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF ILLUSTRATIONS</td>
<td>x</td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Location, Area, and Population</td>
<td></td>
</tr>
<tr>
<td>The Economic Situation</td>
<td></td>
</tr>
<tr>
<td>Historical Background</td>
<td></td>
</tr>
<tr>
<td>Educational Setting--Past Influences</td>
<td></td>
</tr>
<tr>
<td>Educational Setting--Present Situation</td>
<td></td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td></td>
</tr>
<tr>
<td>Purposes of the Study</td>
<td></td>
</tr>
<tr>
<td>Hypotheses</td>
<td></td>
</tr>
<tr>
<td>Significance of the Study</td>
<td></td>
</tr>
<tr>
<td>Definition of Terms</td>
<td></td>
</tr>
<tr>
<td>Delimitations</td>
<td></td>
</tr>
<tr>
<td>Limitations</td>
<td></td>
</tr>
<tr>
<td>Basic Assumptions</td>
<td></td>
</tr>
<tr>
<td>II. REVIEW OF RELATED LITERATURE</td>
<td>24</td>
</tr>
<tr>
<td>Development of Secondary Education System</td>
<td></td>
</tr>
<tr>
<td>Establishment of Senior Comprehensive Schools</td>
<td></td>
</tr>
<tr>
<td>Evolution of Vocational and Technical Education</td>
<td></td>
</tr>
</tbody>
</table>
## Chapter

### III. METHODOLOGY

<table>
<thead>
<tr>
<th>Method</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection of Population</td>
<td>65</td>
</tr>
<tr>
<td>Selection of Sample</td>
<td></td>
</tr>
<tr>
<td>Development of Survey Instrument</td>
<td></td>
</tr>
<tr>
<td>Item Categorization</td>
<td></td>
</tr>
<tr>
<td>Establishment Validity and Reliability</td>
<td></td>
</tr>
<tr>
<td>Procedure for Data Collection</td>
<td></td>
</tr>
<tr>
<td>Procedure for Data Analysis</td>
<td></td>
</tr>
</tbody>
</table>

### IV. DATA ANALYSIS, FINDINGS, AND INTERPRETATIONS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>777</td>
</tr>
</tbody>
</table>

### V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>107</td>
</tr>
</tbody>
</table>

#### APPENDIX

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Secondary Comprehensive School Curriculum</td>
<td>124</td>
</tr>
<tr>
<td>B. National Examination Results 1980-1988 Specialized Craft Full- and Part-Time</td>
<td>126</td>
</tr>
<tr>
<td>C. Sample Cluster Program for Trade and Industry Engineering Crafts</td>
<td>128</td>
</tr>
<tr>
<td>D. Correspondence</td>
<td>130</td>
</tr>
<tr>
<td>E. Validation Instrument</td>
<td>142</td>
</tr>
<tr>
<td>F. Questionnaire</td>
<td>145</td>
</tr>
<tr>
<td>G. Mechanical Clusters and Related Modules, Pilot Project--Trinidad and Tobago</td>
<td>149</td>
</tr>
<tr>
<td>H. Workplace Competencies and Foundations</td>
<td>154</td>
</tr>
<tr>
<td>I. Office Systems Program Configuration Options and Competencies--Oregon Department of Education</td>
<td>159</td>
</tr>
</tbody>
</table>
J. Tables Showing Total Questionnaires Returned by Groups and Response Frequency of Categories .......................... 165

REFERENCES .................................................. 170
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Comparison of Mean Scores for Teachers, School Administrators, and Curriculum Supervisors on all Items Within the Model</td>
<td>79</td>
</tr>
<tr>
<td>2. Analysis of Variance Summary for Perceptions of Three Groups on Timing of Career Choice</td>
<td>81</td>
</tr>
<tr>
<td>3. Scheffé's Multiple Range Test for Difference Between Group Means on Timing of Career Choice</td>
<td>82</td>
</tr>
<tr>
<td>4. Analysis of Variance Summary for Perceptions of Three Groups Toward Completion Time for Specialized Craft Program</td>
<td>83</td>
</tr>
<tr>
<td>5. Scheffé Multiple Range Test for Difference Between Group Means on Completion Time for Specialized Craft Program</td>
<td>84</td>
</tr>
<tr>
<td>6. Analysis of Variance Summary for Perceptions of Three Groups on Main Objective of Program</td>
<td>85</td>
</tr>
<tr>
<td>7. Scheffé Multiple Range Test for Difference Between Group Means on Main Objective of Program</td>
<td>85</td>
</tr>
<tr>
<td>8. Analysis of Variance Summary for Perceptions for the Three Groups on Students' Ability to Make Informed Career Choice</td>
<td>87</td>
</tr>
<tr>
<td>9. Scheffé Multiple Range Test for Difference Between Group Means on Students' Ability to Make Informed Career Choice</td>
<td>87</td>
</tr>
<tr>
<td>10. Comparison of Recorded Mean Scores for Teachers, School Administrators, and Curriculum Supervisors</td>
<td>89</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>11. <em>t</em>-Test for Vocational and Academic Teachers’ Perceptions Toward Curriculum and Instruction, Administration and Planning, and Evaluation</td>
<td>92</td>
</tr>
<tr>
<td>12. Analysis of Variance Summary for Evaluation Component by Vocational Discipline</td>
<td>94</td>
</tr>
<tr>
<td>13. Tukey’s Multiple Range Test for Difference between Group Means for Vocational Disciplines on the Evaluation Component of the Model</td>
<td>94</td>
</tr>
<tr>
<td>14. <em>t</em>-Test for Trained and Untrained Teachers’ Perceptions Toward the Three Components within the Model</td>
<td>96</td>
</tr>
<tr>
<td>15. Analysis of Variance Summary for Perceptions of Combined Groups Toward the Administration and Planning Component when Categorized by Age Ranges</td>
<td>98</td>
</tr>
<tr>
<td>16. Tukey’s Multiple Range Test for Difference between Means on Administration and Planning Component by Age Ranges</td>
<td>99</td>
</tr>
<tr>
<td>17. Comparison of Mean Scores for Teachers, School Administrators, and Curriculum Supervisors on General Impressions of Program</td>
<td>101</td>
</tr>
<tr>
<td>18. Analysis of Variance Summary for Perceptions of the Three Groups Toward Effectiveness of Vocational Education Program</td>
<td>102</td>
</tr>
<tr>
<td>19. Scheffé’s Multiple Range Test for Difference between Group Means on Effectiveness of Vocational Education Program</td>
<td>102</td>
</tr>
<tr>
<td>20. Analysis of Variance Summary for General Impressions Regarding Acceptability Success Rate at National Craftsman Examination</td>
<td>104</td>
</tr>
<tr>
<td>21. Tukey’s Multiple Range Test for Difference between Group Means on Acceptability Success at National Craftsman Examination</td>
<td>105</td>
</tr>
<tr>
<td>Table Number</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>22.</td>
<td>Analysis of Variance Summary for Impressions Regarding Dissatisfaction with Program</td>
</tr>
<tr>
<td>23.</td>
<td>Tukey's Multiple Range Test for Difference between Group Means on Dissatisfaction with Present Program</td>
</tr>
<tr>
<td>24.</td>
<td>Total Number of Returned Questionnaires by Occupational Category</td>
</tr>
<tr>
<td>25.</td>
<td>Total Number of Respondents by Vocational Discipline</td>
</tr>
<tr>
<td>26.</td>
<td>Total Number of Respondents by Teacher Classification</td>
</tr>
<tr>
<td>27.</td>
<td>Total Number of Respondents by Teacher Certification</td>
</tr>
<tr>
<td>28.</td>
<td>Total Number of Respondents by Teaching and Administrative Experiences</td>
</tr>
<tr>
<td>29.</td>
<td>Total Number of Respondents by Industrial and Business Experience</td>
</tr>
<tr>
<td>30.</td>
<td>Total Number of Respondents by Age</td>
</tr>
<tr>
<td>31.</td>
<td>Total Number of Respondents by Gender</td>
</tr>
</tbody>
</table>
LIST OF ILLUSTRATIONS

Figure Page

1. Structure of School System in Trinidad
   and Tobago .................................. 10

2. Characteristics of Today's and Tomorrow's
   Workplace ..................................... 46

3. Location of Secondary Comprehensive Schools
   in Trinidad .................................... 67
CHAPTER I

INTRODUCTION

Location, Area, and Population

Trinidad and Tobago are the most southerly of the Caribbean islands. The two islands are situated on the northeastern coast of South America, seven miles at the nearest point from Venezuela. The combined area of both islands is 1,980 square miles. Trinidad, the larger of the two, has a land area of 1,864 square miles.

The population is multiethnic and was reported to be approximately 1.1 million at the time of the 1980 census. The two major ethnic groups are Negroes (40.8%) and East Indians (40.6%), with other races accounting for 18.6 percent of the total population. The two major cities in Trinidad are Port-of-Spain and San Fernando, with populations of 58,424 and 34,154, respectively. Tobago, the smaller of the two islands, has a total population of 40,745 (Annual statistical digest 1991, 11).

The Economic Situation

The economy of Trinidad and Tobago is dependent mainly on the export of petroleum and petroleum-based products. The country was therefore well poised to benefit from the
high price paid for these commodities during the 1970s. MacDonald (1986) identified the period from 1974 to 1980 as the nation's most prosperous period. During that period, the nation underwent an "economic miracle" which saw real output grow by 7 percent and unemployment decline to 8.8 percent. It was that windfall of foreign exchange which made possible the construction of secondary comprehensive schools in Trinidad and Tobago. The focus of this study is aimed primarily at the vocational education sector of these new secondary comprehensive schools.

The oil bonanza of the 1970s, however, came to an end in the early years of the next decade. The nation then experienced a near economic collapse as the price of oil fell sharply and the production of petroleum declined. Exports in this sector fell from $9.0 billion in 1980 to $4.0 billion in 1989. Whereas, in 1980, petroleum and petroleum-based exports were responsible for 93.0 percent of total exports, this figure fell to 61.3 percent in 1989. The other chief areas of export in 1989 included ammonia (11.0%), iron and steel bar rods (6.0%), urea (3.6%), methanol (2.6%), sugar (1.9%), and pig iron (1.9%) (Annual statistical digest 1991, 154).
Historical Background

Elemental to a proper understanding of its educational setting is a succinct knowledge of the history of Trinidad and Tobago. Social, economic, and political forces which have influenced the evolution and direction of the education system are also explained in its historical past.

The island of Trinidad first became known to western Europeans as a result of Columbus' third visit to the West. He landed on the island of Trinidad on July 31, 1498, and found it inhabited by two Amerindian tribes, the Caribs and Arawaks. These tribes were unaccustomed to any form of strenuous labor. The physical demands placed on them by the Spaniards inevitably led to a significant reduction in the size of their populations.

The resulting shortfall in the supply of labor prompted the "introduction" of Negro slaves to the western hemisphere. While this development brought some measure of relief to the labor problem, poor administration and a lack of expertise on the part of the Spaniards resulted in an almost total collapse of the plantation economy. The French, who were highly recognized as efficient agriculturalists, were then invited to revive the ailing plantation economy. Spain, however, continued to rule until 1797 when the island was captured by the British.
Following the emancipation of the slaves in 1834, the Negro population elected to cease working on the plantations and, instead, explored other occupational avenues. This shortfall in the supply of labor again created a serious problem for the British rulers whose survival was hinged to the island's plantation economy. Ryan (1972) made the point that the dominant institution of the old colonial order in Trinidad and Tobago was the sugar plantation. The origins of the people of the colony, their geographic and hierarchical distribution, and the code of etiquette which governed relationships among them can only be fully understood in the context of the plantation economy.

Britain's attempt to maintain the plantation economy once again resulted in the search for a new supply of labor. Responding to the call were the East Indians, who voluntarily emigrated from their motherland India. They arrived in Trinidad in 1844 with the agreement that they would operate under a system of indentureship. The years that followed witnessed an influx of citizens to Trinidad from countries throughout the world.

Tobago, on the other hand, was governed at various times by Britain, France, Holland, and Spain. The island was one of the most fought over in the Caribbean because of the fertility of its soil. Despite its potential to cultivate a number of different crops successfully, sugar
production became the mainstay of its economy during the first quarter of the nineteenth century. Shortly thereafter, however, the sugar industry experienced serious problems and the economy collapsed. MacDonald (1986) attributed this collapse mainly to the emancipation of the slaves and the removal by England of protective tariffs on sugar. It was against that background that Tobago, after failing to establish an administrative partnership with other Caribbean territories, became politically annexed to Trinidad in 1899. The two islands have since coexisted as the twin-island state of Trinidad and Tobago under a single government.

The advent of the twentieth century heralded two major developments. Oil was discovered in Trinidad, and the working class began to participate in local politics. These developments significantly influenced the political direction of the country and its movement toward self-government. Free elections were held for the first time in 1925, followed by the formation of the People's National Movement and the first party government in 1956. Political independence was achieved in 1962, and the twin-island state of Trinidad and Tobago became a democratic republic in 1976.
Educational Setting--Past Influences

British rule for 165 years was the main contributor to the elitist system of education which was inherited by Trinidad and Tobago. The nation's first Prime Minister, Eric Williams, in an address to the Caribbean Union College in 1974, made the following reference to that system and its failure to address the national interest:

As colonialism drew politically to a close in 1962, Trinidad and Tobago found itself with an education system which bore all the characteristic features of cultural imperialism. There was no national outlook in education and no unified control. . . . The curriculum of the secondary school was pronouncedly metropolitan in scope, orientation and character, designed to prepare the students for metropolitan examinations and metropolitan universities. The system showed an almost total absence of any approximation to the technical or vocational (Sutton 1981, 247-248).

It was quite understandable that the newly formed People's National Movement, in presenting the People's Charter in January 1956, attacked "the uncritical imposition of alien standards and curricula unrelated to local needs, developed in a different climate for people with a different history and different traditions" (Sutton 1981, 14).

Writers of the charter went on to recommend an education system which it felt was better suited to the national interest and which was designed:

1. to satisfy the legitimate demand of the people for education as their democratic right,
2. to relate education to the local environment and local needs,
3. to produce the highly trained workers and the responsible citizens needed in the age of self-government,

4. to ease the strain on the labor market by keeping juvenile workers out of it and retaining them in school (Sutton 1981, 14).

In addition to being critical of the educational system handed down by the British, Williams also attacked the practices and policies of local denominational authorities. He described the denominational schools as "the breeding ground of disunity" (Ryan 1972, 149). He went on to advocate the state school, which would provide the opportunity for cultivating a spirit of nationalism and eradicate racial suspicions and antagonisms. That idea met strong opposition from the religious groups, especially the Catholic Church, which espoused that the principles of catholic education sprang from verities that were supernatural and supranational. The church held the position that nationalistic and utilitarian imperatives could not be allowed to subvert such principles (Ryan 1972). In maintaining this philosophical outlook on the secularization of education, Williams later scrapped an earlier idea of separate schools for vocational education. Instead, he introduced the idea of the secondary comprehensive school which later became an additional arm of the existing secondary school system. This new type of school was designed specifically to provide education and
training to both the academic and the vocational and technical student, all within the same school facility.

**Educational Setting—Present Situation**

The education system is currently controlled by the elected government and is headed by a Minister of Education who is responsible for its administration at all levels. The most senior public service official in the Ministry of Education is the Permanent Secretary, usually a career public servant. Other senior officials include the Chief Education Officer, the Director of School Supervision, and School Supervisors I, II and III.

Public education in Trinidad and Tobago begins at the elementary level where students normally enroll at the age of five years (grade one). Education at this level is compulsory for all children in the six to twelve year age group. At ages eleven and twelve, students write the eleven-plus Common Entrance Examination which is used as a selective mechanism to determine which students receive free secondary level education. This examination has no pass-fail cut-score. Instead it allows the Ministry of Education to select a number of students equal to the number of secondary school places available, based on students' performance. The students with the highest scores are allowed to attend the school of their choice, usually the
five-year or seven-year government and assisted secondary school.

These schools offer a curriculum which concentrates on traditional academic subjects. After five years, students at these schools write the Caribbean Examination Council or the Cambridge General Certificate of Education examination or both. At the seven-year government and assisted-secondary school, the most successful students are allowed two further years of secondary education to pursue three or four subjects at an advanced level (A-Level). Some outstanding students at the five-year secondary schools are also admitted to the seven-year government and assisted-secondary schools, or the A-Level section of some comprehensive schools, to pursue the advanced level curriculum as indicated in Figure 1 by dotted lines. Success at the advanced level examination is generally required for admission to the local University of the West Indies.

Students who do not gain entry to the traditional five-year and seven-year secondary schools are placed in junior secondary schools, composite schools, and the recently converted five-year secondary comprehensive schools. The structure of the school system in Trinidad and Tobago is illustrated in Figure 1.
Fig. 1. Structure of school system in Trinidad and Tobago.

Note. Compre. = comprehensive.
Of the 19,676 accepted secondary school students in 1987-1988, 5,988 (30%) were placed in five-year and seven-year schools, and 13,688 (70%) were placed in three-year junior secondary schools (Report on education statistics 1987/88, 1990). The junior secondary schools operate on a shift-system which allows two groups of students to receive instruction on a daily basis, one group in the morning-session and the other in the afternoon. The curriculum is geared to expose students to a broad-based education for a period of three years. The twelve subject areas offered to students at the junior secondary schools are English, mathematics, general science, social studies, Spanish, agriculture, industrial arts/home economics, arts and crafts, music, physical education, religious instruction, and elective/library. At the end of the three-year period, all students at the junior secondary schools are automatically transferred to the senior comprehensive schools for two further years of secondary level education.

Students who are placed at the composite schools are offered a curriculum which includes both academic and technical and vocational courses. The technical and vocational courses are at the pretechnician level and are not occupation specific. At the end of the five-year period, students are required to write a terminal
examination set by the Caribbean Examination Council and Cambridge examining bodies.

The senior comprehensive schools provide students from junior secondary schools with the final two years of secondary education. The curriculum, which includes academic, pretechnician, and specialized craft vocational programs, is illustrated in Appendix A. It should be noted that the Ministry of Education has recently begun to convert some junior secondary schools from the three-year double-shift to a five-year single-shift system. These newly converted schools are now able to provide instruction to a single group of students on a daily basis. As a consequence, a number of two-year senior comprehensive schools have also been converted to five-year secondary comprehensive schools. The term "secondary comprehensive," as used in this study refers to both traditional two-year senior comprehensive schools and those recently converted to the five-year secondary comprehensive model.

At the secondary comprehensive schools, students in the academic and pretechnician programs write the Caribbean Examination Council and Cambridge General Certificate of Education external terminal examinations. The Cambridge General Certificate of Education examination is being phased out and is replaced by the Caribbean Examination Council. Students in the specialized craft vocational sector write a
terminal examination set by the National Examinations Council. The vocational education curriculum and terminal examination at the secondary comprehensive schools are identical to the curriculum and examinations used at the two technical institutes and single vocational center.

Poor performance by the secondary comprehensive vocational education students on the national craftsman examination (Appendix B) has led to serious concerns at the national level. Many educators and professional organizations have repeatedly expressed concerns, which are focused primarily on the effectiveness of the vocational curriculum and the fact that students are allowed to make a vocational career choice at fourteen or fifteen years of age. In all cases, the concerned parties have recommended that every effort be made by those in authority to develop an alternative model for vocational education at the secondary comprehensive school level.

Statement of the Problem

This study concerned the ascertainment of the perceptions of certain selected groups toward an alternative model for the delivery of vocational education at secondary comprehensive schools in Trinidad and Tobago. The selected groups include vocational educational teachers, academic teachers of related subjects, comprehensive principals and
vice-principals, and vocational education curriculum supervisors.

**Purposes of the Study**

The study was aimed at determining the perceptions of selected groups toward individual factors and specific components within the proposed alternative model. An effort was also made to determine whether significant differences existed in the perceptions of the groups toward the individual factors and the components within the model. The groups were also tested to determine their perceptions when categorized by specific demographic variables.

**Hypotheses**

The following hypotheses were formulated and tested in order to accomplish the purposes of the study:

1. There is no significant difference in the perceptions of teachers, administrators, and curriculum supervisors, toward the thirty-four factors within the model.

2. There is no significant difference in the perceptions of teachers, administrators, and curriculum supervisors toward the three components within the model.

3. There is no significant difference in the perceptions of vocational education teachers and academic teachers toward the three components within the model.
4. There is no significant difference in the perceptions of vocational education teachers toward the three components within the model when categorized by teaching discipline.

5. There is no significant difference between trained and untrained teachers in their perceptions toward the three components within the model.

6. There is no significant difference in the perceptions of vocational education teachers toward the three components within the model when they are classified according to industrial and business experience.

7. There is no significant difference in the perceptions of teachers toward the three components within the model when they are categorized by experience in the teaching profession.

8. There is no significant difference in the perceptions of teachers, administrators, and curriculum supervisors toward the three components within the model when they are classified as one group and categorized by age.

Significance of the Study

The results of the specialized craft national final examination for the period 1980-1988 are illustrated in Appendix B. As is evident from these results, the failure
rate of students in the secondary sector is alarmingly high; ninety-seven percent of secondary school students failed in 1980, with the number decreasing to 85.6 percent failure in 1986. These results are, in the main, reflective of the purpose-built secondary comprehensive schools which offer the full range of the specialized craft vocational program (Appendix A). The high cost to taxpayers for the execution of this program, and the negative effect that failure has had on the thousands of unsuccessful students, have led to serious concerns at the national level. Many reports by qualified committees over the years, have suggested that the advance content-level of the vocational program is ineffective for students who are fourteen to fifteen years of age. It is also widely accepted that the students' general standard of education, particularly in numeracy and literacy, strongly militates against their chances of success at this examination.

The widespread national concern prompted three secondary comprehensive school principals (Atwell, Carrington, and Hernandez) to develop an alternative model for the delivery of vocational education at the secondary comprehensive level. In general, the alternative model proposes a broad-based occupational program with a strong emphasis on general education. It has been developed to prepare students to better adapt to rapid technological
changes, and fit into new and emerging twenty-first century occupations. The program adopts the occupational cluster approach, as explained in Chapter II, as the norm for all vocational education students at the form four level. It also takes into consideration the need for remediation in areas where students are diagnosed as deficient.

This study is aimed specifically at the investigation of the perceptions of vocational education teachers, academic teachers of related subjects, secondary comprehensive school principals and vice principals, and vocational curriculum supervisors toward the proposed alternative model. Upon completion of the study, the findings were made available to relevant authorities in the Ministry of Education. These findings add to the existing body of knowledge, and can possibly be used as a framework for the further development of an alternative vocational education program at the secondary comprehensive level.

**Definition of Terms**

The following specific terms used in this study are defined as follows:

**Caribbean Examination Council** administers an external terminal examination for students at the secondary school level. The examination set by this council now replaces the older General Certificate of Education.
**Cluster** is a group of related vocational education courses characterized by their common sharing of a similar content or information base, skills, and attitudes.

**Composite school** is a five-year secondary school which provides both academic and technical and vocational courses. The technical and vocational courses are, however, at the pretechnician level and are not of a specialized nature.

**Converted senior comprehensive** schools are senior comprehensive schools which were formerly traditional secondary schools but were converted to comprehensive by the addition or expansion of a technical wing. These schools, however, still offer pretechnician courses for the Caribbean Examination Council examination.

**Craftsman** is a worker who has achieved a high degree of manipulative skill in the use of tools and equipment related to a specific technical area.

**Full-time candidate** is a candidate who is attending an accredited institution (public or private) on a full-time basis (i.e., within day school hours for approximately the full week) who has been entered for the examination by the institution attended.

**General Certificate of Education** is the examination administered by the University of Cambridge in England. It is a terminal examination for students at the secondary
school level. This examination is being replaced by the Caribbean Examination Council examination.

**General Education** is that which enables men and women to live rich and satisfying lives and to undertake the responsibility of citizenship in a free society. General education is that education which is needed by all citizens, both men and women (Handout, University of Wisconsin, Stout 1970).

**Internal candidate** is a candidate (full-time or part-time) who is attending an accredited institution (public or private) who has been entered for the examination by the institution (National Examination Council 1990, 6).

**National Examination Council** is the council responsible for administering the national craftsman examinations and certification of craftsmen.

**Part-time candidate** is a candidate who is attending an accredited institution (public or private) on a part-time basis (i.e., for only a part of the school week and usually during the after-school hours) who may be employed and has been entered for the examination by the institution attended.

**Pre-purpose built senior comprehensive** is a school constructed prior to the purpose-built senior comprehensive, and which offers technical and vocational courses of a pretechnician nature according to the Draft Plan 1968-1983.
Pretechnician course is a course of a technical nature which precedes a technician level course. These courses are offered for the Caribbean Examination Council and General Certificate of Education examinations.

Purpose-built senior comprehensive is a school built with workshop facilities to accommodate academic, pretechnician, and specialized craft courses.

Related subjects are subjects of an academic nature which are part of the vocational education program and which are very often taught by academic teachers. These subjects include English, mathematics, science, communication skills, and social studies.

Secondary comprehensive is a term used in this study to refer to both the two-year senior comprehensive and the recently converted five-year comprehensive.

Senior comprehensive school is a school encompassing both academic and technical courses in the same establishment, where the age group to be accommodated is fifteen years and older. Technical refers to pretechnician courses to be offered for the General Certificate of Education examination. The General Certificate of Education examination is being replaced by the Caribbean Examination Council examination (Educational Planning Unit 1968). According to the Report of Working Party on Education (1976), senior comprehensive refers to a school
encompassing academic, pretechnician, and specialized craft training in the same establishment, where the age group to be accommodated is from fourteen to fifteen years of age.

Specialized craft training is training at an in-depth level in certain vocational areas that produces a craftsman who is employable upon the successful completion of the course.

Trade and industry is a (a) craft, skilled trade, or semiskilled occupation that directly functions in the designing, producing, processing, fabricating, assembling, testing, modifying, maintaining, servicing, or repairing of any product or commodity: and an (b) occupation, including service occupations that are not covered previously, which is usually considered to be technical, or trade and industrial in nature (Calhoun and Finch 1982, 207).

Trained teacher is a teacher who has been certified by the Ministry of Education, having successfully completed a program of pedagogical studies at an approved teacher training institution.

Vocational education is offered in programs which help to give definite meaning to education by relating training to definite occupational goals. It is more inclusive than training for job skills. It also develops abilities, understanding, attitudes, work habits, and appreciations
which contribute to a satisfying and productive life. 
(Schaefer 1971, xii).

Withdrawn (paying) candidate is a candidate who is
attending (full-time or part-time) an accredited
institution, is in the examination year of the course
concerned, but, at the discretion of the institution, is
either not entered for the examination or, after having been
entered, is withdrawn and opts to pay for his or her entry.

Delimitations

This study was delimited to vocational education
program in secondary comprehensive schools in Trinidad and
Tobago. Responses were elicited only from vocational
education teachers, academic teachers of related subjects,
secondary comprehensive school principals and vice
principals, and vocational education curriculum supervisors.

Limitations

The results of this study do not possess
generalizability beyond the vocational education program
offered in secondary comprehensive schools in Trinidad and
Tobago.

Basic Assumptions

In relation to this study, it was assumed (a) that all
respondents gave honest, accurate, and unbiased reactions to
the items stated on the survey instrument, and (b) that the responses to statements on the survey instrument constitute valid indicators of subjects' perceptions toward the proposed model.
CHAPTER II

REVIEW OF RELATED LITERATURE

Development of the Secondary Education System

The earliest attempt to provide secondary level education in Trinidad and Tobago was undertaken by private enterprise. Government's first attempt in this direction was the establishment of the Queen's Collegiate school (Queen's Royal College) in 1859. The second government-run secondary school, St. George's College, was established ninety-four years later, in 1953. During this period, however, nine other secondary schools were established by religious ministries, first with St. Mary's College in 1863 and finally with St. Joseph's Convent in San Fernando in 1936. These denominational schools were later classified as assisted-secondary schools and followed an arrangement whereby they were managed by the religious bodies but financed by the state.

In 1959, the government recognized the need for an evaluation of the secondary school system and established the Maurice Commission. Among the recommendations of this commission was the establishment of modern secondary schools. These schools catered to students who were unable
to gain places in the traditional five-year government and assisted secondary school illustrated in Figure 1, but who were desirous of obtaining a secondary level education. They were to provide four years of formal education and offered an integrated curriculum of both academic and technical courses. Students who excelled at these schools were to be allowed to transfer to the grammar schools and write the Cambridge General Certificate of Education examination. With the advent of the eleven-plus common entrance examination, these four-year secondary schools were converted to full five-year government secondary schools. Students were then placed at these schools based on their performance at the eleven-plus common entrance examination. The common entrance examination was also used to select students for the junior secondary school which was introduced in 1972 to replace the postprimary section of the primary school. These schools provided a three-year secondary level program for students from twelve to fifteen years of age (Figure 1).

The senior comprehensive school was next established in 1975, to provide the two final years of secondary education to all graduates of the junior secondary school. The latest addition to the secondary school system is the composite secondary school. These schools provide five years of free secondary education, with a curriculum offering both
academic and technical and vocational courses. The technical and vocational courses are, however, offered at the pretechnician level, as opposed to the specialized craft program offered at the secondary comprehensive level.

Establishment of Senior Comprehensive Schools

The concept of the senior comprehensive school was first introduced to the Trinidad and Tobago government by the UNESCO Educational Planning Commission of 1964. This type of school was supposed to (a) reduce capital and recurrent cost of highly specialized training, (b) promote interaction and correlation between different parts of the curriculum, and (c) give to technical education and the persons who pursue technical courses, a more meaningful and central place in the education system (Educational Planning Unit 1968). Technical and vocational training was to be prevocational in nature, with specialized craft training taking place only at the technical institutes and at night in the senior comprehensive schools.

Continued dependence on a petroleum-based economy, coupled with the introduction of new industries and technologies, led to an increased demand for skilled craftsmen. The government was, therefore, prompted, in 1969, to propose the construction of seven vocational
schools as recommended by the Tripartite Committee. In its 1972 budget debate, the government ambitiously announced that it would increase the number of vocational schools to be constructed from seven to fifteen.

In September 1975, however, the Prime Minister of Trinidad and Tobago, in his Proposals to the Cabinet on Education, reversed the original decision and directed that the idea of vocational schools be canceled. He instructed that they be replaced instead by the senior comprehensive school. He expressed the feeling that the vocational schools would have created a diversity which would have, in turn, produced an extravagant and uncoordinated picture and a negative effect on the education system. He also envisaged that the vocational schools might have been used as a place of refuge for the rejects and dropouts from junior and senior secondary school programs.

A plan was therefore introduced whereby there could be an integration of technical and traditional academic courses on the same school compound. All energies were then directed toward the construction of senior comprehensive schools. The first vocational school, which was at that time under construction at Chaguanas, was immediately modified to operate as a senior comprehensive school. The secondary comprehensive school system was subsequently
launched in 1976. Ten of these schools opened their doors to the graduates of the junior secondary schools. This development also marked the beginning of a new system whereby junior secondary graduates obtain two further years of secondary schooling.

**Evolution of Vocational and Technical Education**

The earliest attempt to introduce technical and vocational education in the school curriculum can be traced as far back as 1880. The curriculum at the primary and secondary schools at that time was not geared to the needs of the existing school population. This led the governor, Robinson, to initiate efforts toward the introduction of a more relevant school curriculum. In a memorandum to the Secretary of State dated December 17, 1888, the governor indicated that School Inspector Guppy had suggested the desirability of establishing some means of technical education for the territory. He went on to suggest that the proposed Victoria Institute could be used as a venue in that direction (Gordon 1975).

As a result of Robinson's efforts, a Board of Industrial Training was created and given responsibility for the administration of technical and vocational education. This board, in collaboration with the Victoria Institute,
launched the very first program in technical and vocational education in 1906. The board later became a legally constituted body, in 1931, with specific responsibility for the training of apprentices. The apprentices at that time were trained by masters, and wrote final examinations set by the City and Guild of London Institute. Centers for these programs were set up in Port-of-Spain, San Fernando, Siparia, Tunapuna, Arima, and Fyzabad.

However, it was not until the 1930s that any form of vocational-type instruction was introduced into the regular school system. At this time, a total of twelve woodwork and sixteen domestic science centers were established and linked to the primary school. They catered only to students of primary school age and provided instruction on a part-time basis. Students attended classes at a specified time on different days of the week. The function of these centers apparently became distorted over the years, and the centers came to be perceived as dumping grounds for backward and undisciplined primary school students.

The first educational institution to operate full-time classes in technical and vocational education was the Junior Technical College, now known as the San Fernando Technical Institute. This institution was established in 1955. The training offered there was pretechnician in nature, with
courses in both the academic and technical programs. A typical program included English, geography, physics, chemistry, metalwork, and woodwork. Students were examined by both the Cambridge and Associated Examining Boards. The intention was that the graduates of the program would later attend a senior technical institute or university and pursue engineering and other technically-oriented fields of study. New programs continued to surface with apprenticeship programs carried out at (a) Chaguaramas Trade School, (b) Texaco, (c) Point Fortin Trade School, (d) Trinidad Petroleum Development, (c) Apex, and (f) Trinidad and Tobago Electricity Commission.

The introduction of technical and vocational education into the secondary school system took place in 1959 as a result of recommendations from the Maurice Commission. The plan, as stated earlier, was to offer four years of formal education to students who were not qualified to enter the grammar schools. The curriculum was an integrated one, offering practical subjects such as agriculture, woodwork, and metalwork for boys and the housewifely arts for girls. These schools never really operated as originally planned. Instead they were modified to accept students who had sat the common entrance examination and were awarded five years of free secondary education. The curriculum at these
schools provided both academic and practical-type courses at the pretechnician level. Other significant recommendations from the Maurice Committee to impact on the development of technical and vocational education were (a) the expansion of the San Fernando Technical Institute and (b) the construction of the John S. Donaldson Technical Institute.

The John S. Donaldson Technical Institute was later established in 1963, and, together with the San Fernando Technical Institute, undertook the training of craftsmen and technicians. The Point Fortin Vocational School, formerly known as the Shell Training School, was also, by that time, preparing students at the craftsman level.

Technical and vocational education was next introduced at the junior secondary school level. These schools replaced the postprimary section of primary school and catered to students between the ages of twelve and fifteen years. All students in these schools were exposed to some form of technical and vocational education. The boys pursued industrial arts or agricultural science, while the girls pursued home economics or commercial studies.

The government's original plan to construct fifteen vocational schools was reviewed and the idea was abolished. The decision was then made to construct the senior comprehensive school, which would provide a curriculum that
offered both academic and vocational-oriented courses. Ten purpose-built senior comprehensive schools were subsequently constructed and came into operation in 1976. Specialized craft training was one of the curriculum options offered at these new schools. This development marked the introduction of vocational education in the curriculum at the secondary school level.

Secondary Comprehensive Vocational Curriculum

As a direct result of the government’s decision to construct the senior comprehensive school, the cabinet, in September 1975, concurrently set up two committees to examine the existing educational program and recommend appropriate changes. One committee, the Working Party on Education, accepting that specialized craft training would take place within the comprehensive secondary education system, recommended that it be carried out in conjunction with industry. Students were to have a comprehensive range of options, coupled with a continuing general education program over a period of two years. It was expected that graduates would enter one of the following programs: (a) sixth form, (b) craft program, (c) subprofessional and technical school, or (d) industry. The first two options were to be offered in all secondary comprehensive schools.
It should be noted that recommendations related to specialized craft programs were based on forecasts of manpower needs of the local business and industrial sectors. The government agencies which made these forecasts indicated that 10 percent of the country's annual manpower requirements would be in the craftsman category. It was on the basis of this figure that the committee recommended the construction of ten senior comprehensive schools, all of which were to offer specialized craft training (Report of working party on education 1976).

The other committee, the Working Party on Craft Training and National Apprenticeship Scheme, in its rationale for the scope of its study, expressed a general recommendation that a strong program of vocational education be developed at the senior comprehensive school to contribute to a sufficiently skilled people that would be essential for achieving the projected economic growth of a developing Trinidad and Tobago. Much thought was directed towards the form of occupational education to be offered at the senior comprehensive school. Clearly, there was a genuine need for beginning vocational education in the business, commercial, home economics, agricultural, and industrial areas. One of the general aims of the senior comprehensive school was seen to be the providing of electives of a vocational or pre-vocational nature (Report of working party on craft training and national apprenticeship scheme 1976, 7-8).

The committee went on to state that the purposes of vocational education at the comprehensive level should be
(a) to provide for exploration and guidance; (b) to develop vocational flexibility; (c) to give a sound general education preparatory to employment or further education; and (d) to give to those who have opted to become employed immediately after leaving the senior comprehensive school, some training which will enable them to advance more rapidly in the field which they may enter.

It was further recommended that all senior secondary school students be allowed to choose from a wide range of courses including prevocational courses conferring minimum entry skills for employment in the agricultural, commercial, industrial, or service sectors. The senior comprehensive schools were to offer vocational education as an integral part of the total school curriculum, with no vocational screening of students at these schools.

At the launching of the senior comprehensive school system, the authorities responsible for determining the vocational education curriculum had the aforementioned recommendations of the two government-appointed committees at their disposal. They eventually opted for a program in which students were to pursue a single craft specialization (Appendix A) over a two-year period. The secondary comprehensive schools were therefore required to pursue, in its entirety, the specialized craft vocational education
program as it existed at the two technical institutes and the single vocational center. A typical trade and industry program included the following subjects: (a) theory (technology), (b) technical English/communication in the trade, (c) mathematics, (d) science, and (e) technical drawing.

Examination and Certification of Vocational Students

The National Examination Council was established in 1965 and was given the responsibility for examinations, certification, and related activities in respect to technical and vocational education at the subprofessional level (National Examination Council 1990).

During the early years of the comprehensive school, all vocational education students were allowed to write the external national final examination set by this council. In February 1985, however, the Ministry of Education directed that students were to fulfil certain attendance and academic requirements before being permitted to write the examination (Ministry of Education 1985). This development led to a reduction in the number of students entered by individual schools for the examination. While schools entered only those students who met the specified criteria, withdrawn students whose parents paid the examination fee were also
allowed to write the examination. In the final analysis, however, the number of candidates entered by individual schools was reduced.

Students who pursue courses with a practical component are required to complete the practical component before being eligible for full certification and, in some cases, before qualifying to sit for the final examination. When this practical component has been satisfactorily completed, students are issued the Certificate of Acquired Competencies. Students who are successful at the national final examination are issued the National Craft Certificate.

**Conceptual Framework and Foundations of Model**

The alternative model for vocational education proposed in this study is based on the premise that technology is ever changing, and at a very rapid rate. Present trends indicate that the worker of the future must possess a sound general education, and be able to operate within a family of occupations, as opposed to narrow specialization in any single occupational field.

In its five-year plan for education (1985-1990), the government of Trinidad and Tobago recognized that technological literacy is a prerequisite for survival in a technological world. It has therefore reaffirmed in its
general philosophy of education that the education process must strive to (a) encourage mature, critical thinking; (b) promote self-reliance; (c) promote a sense of excellence and the development of standards, with particular reference to intellectual standards; (d) raise the level of literacy in the society; and (e) enable students to become technologically literate so as to be able to function effectively in a technological world (Educational Planning Unit 1985).

In focusing more directly on recent trends and developments in technology, the plan included the following point which may have serious implications for vocational education programs of the future:

the world in which we live is one in which rapid technological development constantly generates change and pushes into obsolescence and irrelevance much that was formerly considered permanent or unalterable. The students graduating from our schools must be equipped to deal both with the technological age of the present and the future, as well as the changing horizons of knowledge and scientific achievement which even now, are modifying much that they are being taught (Educational Planning Unit 1985, 17).

It seems evident, therefore, that the planners in the Ministry of Education have recognized the technological developments which are now having an impact on the business and industrial community. Education programs must be geared to prepare students to cope with these new phenomena.
Educators and educational planners must immediately reevaluate their past emphasis on single-craft specializations, and must make available programs that develop basic skills, provide a sound general education, and provide students with a broad-based program that enables them to operate successfully within a family of related occupational fields.

In their belief about the content and structure of the curriculum, developers of the plan also reaffirmed that a sound general education base was necessary before the beginning of specialization at any level. Among the goals for curriculum implementation was the recommendation that students be assessed to determine whether they possessed the prerequisite skills necessary for entry into technical and vocational education and training programs. It was recommended that craft clusters be introduced in the final semester at the junior secondary level, for those students who anticipate enrollment in the vocational program at the secondary comprehensive level. It is important to note that the plan included the recommendation that the program at the secondary comprehensive level should be one that initiates exploratory craft training, and not a specialized vocational training program (Educational Planning Unit 1985). In fact, the elements advocated in the plan for vocational education
at the secondary level are ingrained in the proposed alternative model.

Similar views on the necessity for a broad-based generalized vocational education program have also been expressed at the international level. The UNESCO Revised Recommendation concerning technical and vocational education, adopted by the General Conference at its eighteenth session in 1974, stated that technical and vocational education should be seen as (a) an integral part of general education, (b) a means of preparing for an occupational field, and (c) an aspect of continuing education.

The recommendation also specified that technical and vocational education is a comprehensive term that should not be taken narrowly to mean preparation for a single occupation. The following provisions were among those made, and are consistent with the recommendations mentioned:

[1.] given the necessity for new relationships between education, working life, and the community as a whole, technical and vocational education should exist as part of a system of lifelong education, adapted to the needs of each particular country. This system should be directed to: (a) abolishing barriers between levels and areas of education, between education and employment, and between school and society through: (i) the integration of technical and vocational and general education in all education streams above primary level, (ii) the creation of open and flexible educational
structures, and (iii) the taking into account of individual educational needs and of the evolution of occupations and jobs.

[2.] Technical and vocational education should begin with a broad basic vocational education, thus facilitating horizontal and vertical articulation within the education system and between school and employment thus contributing to the elimination of all forms of discrimination (UNESCO 1986, 9-10).

New trends and thinking continue to indicate that vocational education has outgrown its original rationale of occupational specialization and has achieved a new level of maturity. Wambrod (1974) expressed the view that the major focus of vocational education should not be to develop a specialized skill, but to prepare students to make appropriate career decisions, adapt and transfer skills learned to new occupational areas, and develop dispositions toward work that would enable them to succeed in the world of work.

Babich, in recognizing the need for adaptation and the transfer of skills, made the following recommendation for cooperation and articulation between general education and vocational education:

Vocational educators must realize that general education skills are major contributors to occupational success. In the same regard, vocational education also contributes to non-economic learning such as leadership, good citizenship, and an opportunity to apply knowledge and skills derived from general education. One without the other results in a curriculum that is deficient in a holistic approach and
is less than adequate in today's society (Babich 1981, 4).

Babich also felt that there was a need to redefine vocational education so that its curriculum would reflect a liberating interpretation of a vocational education philosophy. This philosophy should include consideration of the whole individual, taking into consideration the social, emotional, and intellectual needs, as well as employment skill development.

The Carnegie Council (1980), in reacting to the suggestion of a redefinition, pointed out that the implication of redefinition would be a vocational education program that would serve as a developmental base at the secondary level. The main emphases at that level would then be to prepare students for entry-level positions, to develop attitudes toward and knowledge of career clusters, and to provide opportunities for career advancement. The council saw the postsecondary level as the place for the development of specialized technical skills.

As concerns about the direction of technical and vocational education for the young in Britain grew, views of a similar nature were expressed. The concerns at that time led the British Prime Minister, in 1982, to instruct the chairman of Manpower Services Commission, together with the
Secretaries of State for Education and Science, for Employment, and for Wales, to develop a pilot scheme for technical and vocational education for students who were from fourteen to eighteen years of age. The objectives of this pilot program were to

widen and enrich the curriculum in a way that will help young people prepare for the world of work, and to develop skills and interests, including creative abilities, that will help them to lead a fuller life and to be able to contribute more to the life of the community (Dale 1986, 30).

The pilot scheme was subsequently instituted in Britain in 1983, with the following guidelines for the Technical and Vocational Education Initiative:

Each project must provide a full-time program; offer a progressive four-year course combining general with technical and vocational education; commence at 14 years; be broadly based; include planned work experience; lead to nationally recognized qualifications (Walker and Barton 1986, 31).

Given the prevailing social and economic situation in the Republic of Trinidad and Tobago, the vocational education program at the secondary level should be well grounded in the theories advocated in this discussion. The proposed alternative model, on which the investigation is focused, is thus geared to provide a vocational education program at the secondary comprehensive level, that is consistent with the theoretical foundations expressed.
The Future of Work--Implications for Education

Because it is a developing nation, vocational educators in Trinidad and Tobago must be constantly aware of new developments in technology and of the very rapid rate at which these technologies change. These developments inevitably lead to a change in the nature of work and the workplace, and, therefore, have implications for education, and, more specifically, for the school curriculum. Vocational education planners need to take into consideration the future nature of the workplace and develop programs consistent with the expected scenario.

In looking at the technological revolution and its impact on society, UNESCO (1990) warned that all peoples and countries are affected by the development and introduction of these new technologies. It also pointed out that trends are such that the technological revolution may contribute over the next few years to an increase of world inequalities, thus widening the gap between industrialized and developing countries. As the report indicated, we are entering a new period of the multiskilled worker, with increased demands for flexibility, improvisation, teamwork, and a workforce that possesses a broad general knowledge of integrated systems and processes. Therefore, vocational education will have the responsibility in the future to
provide students and other new client groups with new training programs that are geared toward new patterns of employment, skills, and knowledge.

These new developments in technology, in addition to economic competition from abroad, have created fear, even within the United States. There is a serious concern, both in education and industry, that the American workforce may be ill-equipped to meet future demands of the workplace. This fear has led to President Bush's call for a new education strategy, "AMERICA 2000." The Department of Labor, in responding to this call from the president, has set up the Secretary's Commission on Achieving Necessary Skills.

In its report, "What Work Requires of Schools" the United States Department of Labor (1991) reported that new workers must be creative and responsible problem solvers, and have the skills and attitudes on which employers can build. It reached the following conclusion:

1. All American high school students must develop a new set of competencies and foundation skills if they are to enjoy a productive, full, and satisfying life.

2. The qualities of high performance that characterize our most competitive companies must become the standard for the vast majority of our companies, large and small, local and global.

3. The nation's schools must be transformed into high performance organizations in their own right (U. S. Department of Labor 1991, vi).
The commission also identified the globalization of commerce and industry and the explosive growth of technology on the job, as the two conditions that have changed the terms for young people's entry into the world of work. The five competencies and a three-part foundation of skills and personal qualities recommended as essential preparation for all students, both those going directly to work, and those planning for further education are illustrated in Appendix H. The characteristics of today's and tomorrow's workplace, as envisioned in "Competing in the New International Economy" (Office of Technology Assessment 1990), is illustrated in Figure 2. It should be noted that, as in the proposed model for the comprehensive schools in Trinidad and Tobago, specialized craft training in the traditional model gives way to a need for a broader level of skills training in the high performance model.

Paul (1987), in reviewing training for performance and economic development in Trinidad and Tobago, warned:

It is important for us as a nation to realize that because of the transitional stage we are going through, any training programme implemented during this period must attempt to give the necessary versatility required of our technical working population, to adapt to technological changes with spontaneity.

He went on to make the following suggestions as appropriate for solving national problems:
<table>
<thead>
<tr>
<th>TRADITIONAL MODEL</th>
<th>HIGH PERFORMANCE MODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRATEGY</strong></td>
<td></td>
</tr>
<tr>
<td>Mass production</td>
<td>Flexible production</td>
</tr>
<tr>
<td>Long production runs</td>
<td>Customized production</td>
</tr>
<tr>
<td>Centralized control</td>
<td>Decentralized control</td>
</tr>
<tr>
<td><strong>PRODUCTION</strong></td>
<td></td>
</tr>
<tr>
<td>Fixed automation</td>
<td>Flexible automation</td>
</tr>
<tr>
<td>End-of-line quality control</td>
<td>On-line quality control</td>
</tr>
<tr>
<td>Fragmentation of tasks</td>
<td>Work teams, multiskilled workers</td>
</tr>
<tr>
<td>Authority vested in supervisor</td>
<td>Authority delegated to workers</td>
</tr>
<tr>
<td><strong>HIRING AND HUMAN RESOURCES</strong></td>
<td></td>
</tr>
<tr>
<td>Labor-management confrontation</td>
<td>Labor management cooperation</td>
</tr>
<tr>
<td>Minimal qualifications accepted</td>
<td>Screening for basic abilities</td>
</tr>
<tr>
<td>Workers as a cost</td>
<td>Workforce as an investment</td>
</tr>
<tr>
<td><strong>JOB LADDERS</strong></td>
<td></td>
</tr>
<tr>
<td>Internal labor market</td>
<td>Limited internal labor market</td>
</tr>
<tr>
<td>Advancement by seniority</td>
<td>Advancement by certified skills</td>
</tr>
<tr>
<td><strong>TRAINING</strong></td>
<td></td>
</tr>
<tr>
<td>Minimal for production workers</td>
<td>Training sessions for everyone</td>
</tr>
<tr>
<td>Specialized for craft workers</td>
<td>Broader skills sought</td>
</tr>
</tbody>
</table>

Fig. 2. Characteristics of today’s and tomorrow’s workplace. Source: Office of Technology Assessment, 1990.
1. This is the most appropriate time in the nation's development to keep our youngsters at school until age nineteen (19). This will enable them to attain a proper foundation in general secondary education up to age sixteen (16) and to develop the hardcore skills between ages sixteen (16) and nineteen (19). It is also the best time to keep our youngsters longer at school since the employment prospects for school-leavers are bleak.

2. Any form of narrow-based training designed to produce specialists at an immature age should be immediately abandoned and a broad-based education implemented. Career guidance officers could monitor the strengths and weaknesses of the individuals, who could later specialize in their chosen fields, but in an industrial climate.

The Cluster Concept

Pursuing a single-craft specialization is presently considered the norm for vocational education students at the secondary comprehensive level in Trinidad and Tobago. An alternative approach, and one which may be considered more appropriate, is the concept of the occupational cluster. The cluster concept is based on the premise that certain occupations have common learning and skills requirements, and that students who master these skills requirements have more employment options (Calhoun and Finch, 1982).

The cluster approach, by the very nature of its non-specialized focus, provides the opportunity for remediation, where necessary, and for concentration on the development of basic skills. As illustrated in Figure 2, the worker of the
future will need to be both multiskilled and be well grounded in the basic skills.

Numerous theories have supported the notion that while secondary students think about a career and an initial career decision, they need to keep open as many alternatives as possible. Frantz and Word (1971) cautioned that everything possible should be done to avoid premature foreclosure, and that students should be allowed to keep their options open until they have had the opportunity to find their own place in the working world.

Kratochvil and Thompson (1972) saw the cluster concept program as one designed to give students a range of skills that would prepare them for entry-level capability in a variety of related rather than specific occupations. It was anticipated that a wider range of entrance skills, and a level of articulation across several occupational areas, would enhance students' potential employability.

A study of the cluster approach for secondary vocational education in Georgia, in the United States, revealed that a multioccupational approach to vocational education in high school was promoted by a concern for the age of students, the nature of the secondary school population, and the general nature of the Georgia economy (Scott and Connor 1980). It should be noted that the state
of the economy played a major role in helping to determine the vocational education program at the secondary school level in Georgia. Vocational education planners in Trinidad and Tobago must likewise consider the national economy in the determination of a relevant curriculum.

Scott and Connor (1980) expressed a firm conviction that the cluster concept was the most logical choice where the economy was a transitional rather than static one. They saw the cluster approach as having the potential to increase student flexibility in the short term, and provide mobility in the long term.

Many departments of education within the United States of America have adopted the cluster concept as the norm for vocational education programs at the secondary school level. The Oregon Department of Education (1990), in its Competency Based Program Content Standards for Office Occupations, described the cluster format as one designed to meet entry level needs and to help prepare students for postsecondary learning experiences. All of the department programs were to be executed under the competency-based system of instruction. Students were to be evaluated through the use of competency profiles, with an appropriate number or letter indicating the level of proficiency attained. At the end of the program, successful students were to be awarded a
certificate of competency by the appropriate certifying authority. The office systems program configuration options, course titles, and descriptions prepared by the Division of Vocational Technical Education, Oregon Department of Education are illustrated in Appendix I.

Among the many committees in Trinidad and Tobago recommending the replacement of specialized craft by the more general cluster approach was the National Advisory Committee on Education. Its Report of the Technical Vocational Sub-Committee on Technical and Vocational Education in Senior Comprehensive Schools, noted that

industrial was now requesting what is termed "multi-skilled workers" a new and developing category of workers in the world of work. This has arisen because of the waste of time and hence manpower and finance, resulting from over-specialization in distinct craft areas (National Advisory Committee on Education 1989, 21).

This committee also expressed agreement with the Report of the Cabinet Appointed Committee to Examine the Content, Organization and Administration of Technical and Vocational Education in Secondary Schools (1984). The latter committee very strongly recommended that the specialized craft program at forms four and five of the senior comprehensive school be replaced with a program of occupational clusters.
Proposed Alternative Model

Development and Early History

The alternative model discussed in this study was developed by Atwell, Carrington, and Hernandez (1985), in response to the widespread national concern over the effectiveness of the vocational education program at the secondary comprehensive level. At different stages of its development, suggestions were solicited from other principals and the executive of the Association of Principals of Public Secondary Schools.

Upon completion of the model in 1985, it was presented to the National Training Board by a cabinet-appointed member of the board. The National Training Board approved the model and recommended that it be presented to the Division of Technical and Vocational Education and Training for further action. The Director of Technical and Vocational Education and Training at that time expressed the view that the model could not be implemented at that point in time, because it would have the effect of extending the time spent in school by an additional year. The suggestion that the alternative model be pilot-tested in a sample of schools was also not considered acceptable.
Background to the Model

Students who are selected to pursue specialized craft vocational education in the secondary comprehensive schools are expected to follow a program of studies similar to that used in the two technical institutes and the vocational center. At the technical institutes and vocational center, however, students are selected on the basis of their performance on an entrance examination which is followed by an interview. The interviewer generally seeks to identify students' interests and needs, and whether they possess the aptitude required for the vocational area selected.

Experience over the last sixteen years has shown that students entering secondary comprehensive schools from junior secondary schools at age fourteen years or more are incapable of coping with the specialized craft program because of their unpreparedness in the following areas:

1. Their general standard of education, particularly in literacy and numeracy, is too low to allow them to grasp the theoretical and practical content of the course.

2. Their immaturity, both in age (14+) and personal development (self-image, self-discipline, ability to perceive fully the relationship between present and future activity) militates against their making wise and realistic choices at this point in their education (Atwell et al. 1985, 1).

This unpreparedness manifests itself in (a) a high physical drop-out rate; (b) a high mental drop-out rate, where consistent low performance produces frustration; and (c) a
choice of final career which often does not reflect the training received in the chosen vocational craft course.

The situation is further compounded by the fact that some students who do not meet certain specified criteria at the end of the form four year, are prevented from writing the final examination. Results of the final national examination during the period from 1980 to 1988 (Appendix B), have shown that there is a high failure rate even among those students who fulfil the requirements outlined by the Ministry of Education.

The fact that there is a compelling need for an alternative model for vocational education at the secondary comprehensive level was expressed as far back as 1982. The Report of the Association of Principals of Public Secondary Schools (1982) suggested the introduction of a diagnostic year either in the final year at the junior secondary school or in the first year at the senior comprehensive school, so that vocational education students may gain the information and experience on which to make a proper career choice. The principals further recommended that only the part I of the national final examination be offered in the day program at senior comprehensive schools, and the part II at an evening school program. The report also recommended that students
who were successful on the part I level of the national
craft diploma be certified accordingly.

Following shortly thereafter, in 1984, was the Report
of the Cabinet Appointed Committee to Examine the Content,
Organization, and Administration of Technical and Vocational
Education in Secondary Schools. This report recommended
inter alia that vocational training programs in specialized
crafts be removed from the curriculum of forms four and
five, and be introduced into form six; and that the "best"
students at form five level in technical and vocational
clusters, be selected for sixth form education in the
specialized craft areas.

Further support for an alternative model came from a
study by Lewis (1983), who analyzed the effects of senior
comprehensive schooling on the labor market performance of a
sample of vocational and nonvocational graduates in Trinidad
and Tobago. Lewis found that a substantial number of
students who were prepared for crafts found employment
inconsistent with their training. This research revealed
that 62.5 percent of the female and 46.3 percent of the male
specialized crafts students reported finding little or no
relationship between their training and first jobs. The
feeling was also expressed that the schools were acting
contrary to established theory and research regarding the
vocational maturity of students fourteen years of age.

Lewis proceeded to make the following recommendations based on the findings of his study:

1. It is recommended that more effective ways be found to initiate young skilled workers in Trinidad and Tobago into industry. The senior comprehensive school seems clearly to be ill-suited to this task.

2. The goal of industrial technological literacy could be retained and pursued by way of generic technical programmes—more in keeping with present efforts at pretechnician education—and geared to all, with the assurance that no labour market advantages will be lost by any . . . could be translated into carefully designed programmes.

3. On-the-job Training should remain a critical concept in overall training efforts. . . . Firms should be made aware of their responsibilities toward training, and should be discouraged from believing that the school owes industry anything other than a trainable technologically literate graduate.

4. It is recommended that attempts at formal training should begin only after participants have had full exposure to secondary education. Through generic technical programmes as suggested in recommendation two, and through proper guidance services well supported by a job information base, students will be better placed to make rational career choices (Lewis 1983, 264-266).

It is, however, important to recognize that the success of a vocational education program should not be based entirely on the labor market performance of its graduates. Martens et al. (1980) expressed the view that the effectiveness of a vocational education program should not be based on the assessment of inputs, such as the amount of money spent, or delayed outcomes, such as the proportion of vocational education graduates employed in occupations.
related to the training they received, their salaries, and the degree of satisfaction with their job, and with their vocational preparation. The point was made that although such data was important, there may be periods of unemployment when graduates may not get jobs in areas related to their training, their interest may change, or they may elect to obtain additional education and training.

The proposed model, in addition to providing an alternative program to commence in the form four year, is also designed to address the provision of an alternative program in the form five year for students who were withdrawn from the national final craftsman examination. It is designed to organize the specialized craft program in such a manner that most students have the opportunity, over a three-year period, to successfully complete the program.

Aims of Model

The aims of the model are:

1. to shift the emphasis to a generalized craft program using the cluster concept in the form 4 year. This will allow additional time for a potential skilled craftsman to make a more mature choice of a field of specialization. It will also allow him maximum time to acquire the necessary competencies including a higher level of general education. With the down-turn in the economy and the inability of industries to provide the high number of jobs in single-craft specializations, the student with a cluster exposure may be more appealing to employers.

2. to engage the problem of the provision of alternative model that will cater for students not
entered for the final examination at the end of the form 4 year, and also give students the opportunity, over a three-year period, to successfully complete the single-craft specializations (Atwell et al. 1985, 2).

The Model

The authors of the proposed alternative model share the view that all education at the secondary school level should be general in nature, and that a broad-based program of occupational clusters should replace the specialized craft program now offered. They consider specialized craft to be tertiary level education which should be taught only at the technical institutes, the vocational center, the proposed community college, or the evening program at senior comprehensive schools.

Similar views have been expressed in the United States by critics who claim that vocational education is inappropriate at the high school level. They expressed the view that high school students need to concentrate on a good foundation in the basic skills, before beginning occupational preparation. Some states have already ascribed a diminished role to high school vocational education. In California, secondary vocational education is offered through Regional Occupational Programs. In Florida, vocational education is part of adult education, and students wishing to enroll are no longer considered
secondary school students. Grossman et al. (cited in Lotto and Murphy 1987) recognized that across the United States, both the number of sections offered in vocational education and enrollments in secondary vocational education have declined as students have been allowed fewer electives, and have succumbed to pressure to concentrate on academics. An examination of the situation in Trinidad and Tobago revealed that the physical facilities and staff for specialized craft training already exist at the secondary comprehensive schools. In view of this fact, it was felt that the objective of the model could best be attained in two stages.

Stage I--The introduction of a diagnostic year of generalized craft using clusters, followed by a year of specialized craft to an intermediate level.
Stage II--Two years of Generalized Craft using the occupational cluster concept
Year I--Day School (Atwell et al. 1985, 4).

There would be a common diagnostic year in which all vocational education students would pursue one cluster program. Each cluster program would include a number of related occupational areas as outlined:

<table>
<thead>
<tr>
<th>Trade and Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building</td>
</tr>
<tr>
<td>Masonry</td>
</tr>
<tr>
<td>Carpentry</td>
</tr>
<tr>
<td>Plumbing</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Clusters could be developed in other occupational areas as deemed necessary by curriculum committees in consultation with experts from the business and industrial sectors. The two programs listed below are suggested clusters in agriculture and creative arts:

**Agriculture**  
- Agricultural Production  
- Products and Processing  
- Fishing and Fisheries  
- Horticulture  
- Forestry Production and Processing

**Creative Arts**  
- Art and Craft  
- Music and Movement  
- Physical Education

A team-teaching approach, according to the authors of the proposed model, was deemed the most appropriate method for the delivery of this type of program. Students would be assessed continuously on a monthly basis and sit for a common examination at the end of the year. A sample cluster program for the trade and industry engineering crafts is outlined in Appendix C. The results of the end-of-year examination would determine fitness for entry into a specialized craft program or entry into an alternative program of further craft training of a generalized nature.
Year II—Day School

1. a one-year program for those students qualifying to enter the Specialized Craft Program leading to an intermediate level of the National Craft Diploma

2. a one-year alternative program for students opting to continue in craft education and those withdrawn as a result of form 4 end-of-year qualifying examinations.

Options available in alternative program in year two:

1. continue same cluster program,
2. transfer to another cluster program,
3. transfer to a single area, that is, follow a common workshop program with the specialized craft students, but with a different mix of related subjects.

The option finally decided upon would depend upon:

1. students' ability
2. students' preferences,
3. teachers' recommendations,
4. time-tabling constraints,
5. teacher constraints (Atwell et al. 1985, 5).

At the end of the fifth year of secondary education, students would proceed to one of the following programs offered at the technical institutes, vocational center, proposed community college, or evening program at senior comprehensive schools:

1. A one year program, the continuation of the program offered in year two to specialized craft students leading to finals of national craft diploma
2. Students of the year two alternative program may enter the appropriate year one, two, or three level of the evening class program, or they may enter the world of work (Atwell et al. 1985, 6).

Strategies for Curriculum Development

The developers of the model were concerned about the consequences of a process of curriculum development which did not involve the teachers of the programs concerned.
They felt that it was wrong to enforce a curriculum on an entire system before it was tested in the schools, and before the teachers were adequately prepared for its delivery. Understandably those curricula are perceived by teachers as top-down impositions, and face, in the early stages of implementation, a degree of passive and active resistance, which is considered the wrong climate in which to attempt any innovation.

What is needed is a climate of involvement and enthusiasm on the part of teachers. The authors of the model believe that such a climate is most likely to be fostered by a method of curriculum development which involves the teachers from the very start. Teachers must be seen as necessary, important, and, indeed, indispensable partners in the process. The establishment of subject area committees is but the first step in the movement toward this method. Subject area committees of teachers in the craft programs should be set up to work out the details of these curriculum proposals. The idea is to identify teachers in each subject area and to bring them together in Subject Area Committees for the purpose, inter alia, of working in collaboration with the curriculum unit of the Ministry of Education and with industry. The subject area committee in
each school would also work out the mechanics of team teaching in the clusters recommended.

Along with a high degree of teacher involvement, these curriculum proposals are further premised on the concept of curriculum development as continuous and never-ending. One of the partners in this process must be industry. It is with this philosophy, and in a spirit of fraternity with the agencies that must be a part of curriculum development, that this model is offered.

Examination and Certification Procedures

At the end of the form five year, the students would be examined and successful students would be certified by the National Examination Council. The examination would be based on an appropriate portion of the total specialized craft curriculum, which would be determined by the curriculum supervisors after consultation with teachers and industry. Successful students who were deemed to have reached an intermediate level, would continue to the final examination in an evening school program in the senior comprehensive, technical institutes, vocational center, or proposed community college.

The increased concentration on general education in the first year raises the issue of rationalizing the National Examination Council and Caribbean Examination Council
programs in English language, mathematics, social studies, science, and drafting. The highest priority would be paid to the subjects English and social studies.

There would also be a need to systematically review and update all examination procedures now used by National Examination Council. This could be done by the establishment of a question bank and the use of other procedures now used by Caribbean Examination Council.

**Post-Model Cluster Implementation**

The Ministry of Education introduced the cluster concept on a pilot basis in three comprehensive schools in 1988. Students in the pilot phase were exposed to clusters in the home economics, mechanical, and construction fields. Of particular interest is the extent to which this implemented program is similar in structure to the proposed alternative model presented to the Ministry of Education in 1985. The modules and competencies associated with the mechanical cluster are illustrated in Appendix G. At the end of each program, students are presented with a certificate of acquired competency. This certificate indicates the level of competency achieved in each unit of the modules. The level of competency achieved rated on a scale from zero to six. Zero indicates that the student cannot perform the task satisfactorily for participation in
a work environment. At the other extreme, six indicates that the student can perform with more than acceptable speed, quality, initiative, and adaptability, and can also lead others in performing the task.
CHAPTER III

METHODOLOGY

Method

This study was designed to ascertain the perceptions of vocational education teachers, academic teachers of related subjects, secondary comprehensive school administrators, and vocational education curriculum supervisors toward an alternative model for vocational education at the secondary comprehensive level in Trinidad and Tobago. The survey research method was utilized. This method typically employs questionnaires and interviews in order to determine the characteristics, opinions, attitudes, preferences, and perceptions of persons of interest (Borg 1987). Information collected by the survey method can also be used to describe and explain the beliefs, attitudes, values, and behavior of selected groups of individuals (Williamson et al. 1982).

Selection of Population

Nineteen secondary schools in Trinidad and Tobago were classified as senior comprehensive schools by the Report on Education Statistics 1987/1988. Fourteen of these schools are purpose-built senior comprehensive schools which offer the full range of specialized craft vocational courses. The
focus of this study was on the fourteen purpose-built senior comprehensive schools illustrated in Figure 3. The single secondary comprehensive school in Tobago was not equipped to offer specialized craft vocational courses and, therefore, was not included in the study.

The total population of teachers for the purpose of this study included all vocational education teachers and all academic teachers of related subjects at the fourteen schools listed. The number of teachers at these schools varied according to student enrollment. The number usually does not exceed 100. Normally between 35 percent and 40 percent of the teachers on any staff of a secondary comprehensive school fall into the two categories mentioned. The total population of teachers for this study therefore did not exceed 560.

The total number of principals and vice-principals of the secondary comprehensive schools was twenty-eight. The total number of vocational education curriculum supervisors in the Division of Technical and Vocational Education and Training was seventeen.

**Selection of Sample**

A random sample of eight of the fourteen purpose-built secondary comprehensive schools was selected using the *Statistics with Finesse* (Bolding 1989) random sample generator. The teachers were considered nested within the
Code:
1. Arima
2. Barataria
3. Barrackpore
4. Carpichaima
5. Chaguanas
6. El Dorado
7. Fyzabad
8. Malick
9. Marabella
10. Mucurapo
11. Pleasantville
12. Princes Town
13. San Juan
14. Siparia

Fig. 3. Location of secondary comprehensive schools in Trinidad.
following eight schools selected in the sample: Arima, Barataria, Chaguanas, Marabella, Pleasantville, Princes Town, San Juan, and Siparia.

All vocational education teachers and all academic teachers who taught related subjects to specialized craft students in the schools were surveyed. The principals and vice principals of all fourteen schools and all vocational education curriculum supervisors were censored because the number in the two groups was small. The census of the total population in the two groups significantly reduced the possibility of sampling error.

Development of Survey Instrument

The instrument provided in Appendix F was developed for this study. A seven-point Likert-type measurement scale on which respondents expressed a favorable or unfavorable perception was utilized.

The questionnaire was divided into two major sections. The first section contained a list of statements which reflected the major ideas inherent in the proposed model. Of the forty items on the questionnaire, six did not refer specifically to any component of the model. These six items were included to extract information of concern which indirectly bore relevance to the study. These items reflected general impressions of respondents about the
existing program and the proposed alternative model. The items in this category were numbers 7, 8, 30, 37, 38, and 40, which dealt with students' level of academic preparation to pursue specialized craft courses, success of existing vocational education program, the cluster program, and students' employability, need for alternative program, success rate of vocational education students, and level of satisfaction with existing program. They were removed from the total model and treated appropriately in the analysis of the data.

The other thirty-four items in the questionnaire addressed specific areas within the model. Some areas focused on student maturity, appropriateness of proposed curriculum, student readiness for content level of program, generalization versus specialization, remedial and developmental education, teaching method, terminal examination, certification, and the cluster approach to vocational training. These thirty-four items were subsequently divided into three major categories.

**Item Categorization**

In an attempt to establish three specific categories within the model, the questionnaire in its final form was submitted to a five-member jury panel for analysis. The members of this panel included three professors from the
education faculty, and two doctoral candidates who had teaching experience at the university level. They were requested to place each item within one of three categories. The three categories identified were curriculum and instruction, administration and planning, and evaluation. Three or more panel members were required to agree on an item's assignment for it to be categorized accordingly. The items were eventually categorized as follows: the curriculum and instruction category included items 3, 5, 6, 9, 10, 11, 13, 14, 15, 17, 18, 19, 25, 27, 31, 32, 34, and 39. The administration and planning category included items 1, 2, 4, 12, 16, 21, 35, and 36. The evaluation category included items 20, 22, 23, 24, 26, 28, 29, and 33. Items 1, 2, 8, 10, 18, 20, 24, 25, 37, and 38, reflected views which were opposite to the principles advocated in the proposed alternative model. These items were reverse coded prior to analysis of the data.

The second section of the questionnaire was designed to obtain demographic data. The data provided information related to occupational category, vocational discipline, teacher classification (i.e., vocational or nonvocational), certification status, teaching and administrative experience, industrial and business experience, and age and gender.
Each copy of the final questionnaire was accompanied by a cover letter which explained the purpose of the study and the importance of respondents’ honest and unbiased responses to the overall success of the project. To ensure confidentiality, an envelope was provided in which the completed questionnaire was to be sealed. All respondents were thanked for their valuable time and willingness to cooperate. They were also informed that the findings of the study would be made available to them upon request.

**Establishing Validity and Reliability**

When the initial draft of the survey instrument was approved, it was mailed to the research coordinator in Trinidad. The draft was then distributed to a jury panel of five experts selected from among recognized educators. The members of jury panel also had considerable experience in, and knowledge of, the vocational education program at the secondary comprehensive level. The jury panel was comprised of a present secondary comprehensive school principal, a former secondary comprehensive school principal, a senior vocational education teacher, a vocational education curriculum supervisor, and department head of technical and vocational teacher training.

Members of the jury panel were each given a copy of the original draft and a validation instrument (Appendix E).
They were asked to comment on the appropriateness of items used in the questionnaire and to make any suggestions which they felt would contribute to the validity of the instrument. The reactions from the panel of experts were then returned. Any items that were considered inappropriate by three or more of the five-member panel were to be removed. However, no items on the questionnaire were considered inappropriate by three or more of the panel members. Based on the suggestions and recommendations of the panel members, however, some items were reworded.

A second draft was then prepared and again sent to Trinidad where it was pilot-tested for reliability. A sample of thirty subjects from among the population was used in this exercise. Cronbach's Coefficient Alpha ($\alpha$), a general form of the Kuder-Richardson (K-R 20), was used to establish the internal consistency of the questionnaire. The K-R 20 formula is considered by many specialists in educational and psychological measurement to be the most satisfactory method of determining reliability for this type of instrument (Borg and Gall 1989).

Twenty-nine of the thirty questionnaires were completed and returned. Two questionnaires were incomplete. An analysis for reliability was performed on the twenty-seven usable responses using the Statistical Package for the
Social Sciences. The reliability analysis produced a Cronbach Alpha of 0.7568.

Having established satisfactory levels of reliability and validity, the questionnaire was prepared in its final form and mailed to Trinidad for distribution to the sample. Care was taken to ensure that respondents in the validity and reliability exercises were not requested to complete the final survey instrument.

Procedure for Data Collection

A letter (Appendix D) seeking permission to administer the survey instrument was forwarded to the Permanent Secretary in the Ministry of Education. The Permanent Secretary expressed a willingness to assist with the research project and requested copies of the proposal and questionnaire. They were forwarded to the Permanent Secretary, and approval to conduct the study was subsequently granted (Appendix D). The application for approval of investigation involving the use of human subjects and the letter of approval are also provided in Appendix D.

A research committee to administer the questionnaire was set up during a visit to Trinidad and Tobago in May 1991. The research committee included a coordinator and seven research assistants. All were certified and
experienced teachers whose dedication and trustworthiness were highly regarded. The research committee members had all given the assurance that they would meticulously follow all instructions issued with regard to the distribution and collection of the questionnaires.

The research coordinator ensured that all the outlined procedures were followed. The research assistants distributed and collected the questionnaires from school personnel and curriculum supervisors in accordance with letters issued to them (Appendix D). They made appointments to meet the principals of the schools concerned, at a time convenient to each principal. At that meeting, the research assistants briefly discussed the project and its purposes. The principals of the eight sampled schools were then given the letter of introduction and requested to distribute copies of the questionnaire to the vice-principal, vocational education teachers, and the academic teachers of related subjects. The principals were informed that the research assistant would return in two weeks to collect the completed questionnaires. If at that time the return rate was less than 75 percent to 80 percent, the principals were informed that the research assistants would return one week later to collect the remaining questionnaires.

In a similar manner, questionnaires were distributed and collected from the principals and vice principals of the
non-sampled schools and the vocational education curriculum supervisors. When the required rate of return had been accomplished, the questionnaires were returned for analysis.

**Procedure for Data Analysis**

All returned questionnaires were thoroughly examined for possible errors and missing data. Responses were coded and analyzed through the use of the *Statistical Package for the Social Sciences* on the mainframe computing facilities at the University of North Texas.

Sample means were used to determine differences in the perceptions of the groups studied. Statistical tests were determined after considering the hypotheses, the chosen sample statistic, and the assumptions underlying the population distributions. One-way analysis of variance was used to determine group differences toward individual statements on the questionnaire. Because concern over differences in sample size, the Bartlett Box F statistic was used to determine whether the assumption of homogeneity of variance was met. Where this statistic was significant, the association between size of sample and the variance associated with it was examined. Hinkle, Wiersma, and Jurs (1988) showed that if population variances differ, there may be a serious problem when sample sizes are unequal. If the larger variance is associated with the larger sample, the F
test is too conservative. If the smaller variance is associated with the larger sample, the F test is too liberal. (If the alpha level is .05, conservative means that the actual rate is less than .05). Following any significant F test, the Scheffé post hoc multiple comparison procedure was used to determine which pair of sample means differed.

T-tests were used to determine significant differences in perceptions when two groups were compared. Multivariate analysis of variance (MANOVA), an extension of univariate analysis of variance, was used to test simultaneous differences among groups on multiple dependent variables. The Wilk's Lambda (Λ) F statistic was used to test statistical significance. The generalized formula used to compute Wilk's Λ was:

\[
\Lambda = \frac{\text{det} W}{\text{det} T}
\]

where \(\text{det} W\) equals determinant of the pooled within groups SSCP and \(\text{det} T\) equals determinant of the total SSCP. Where differences were found significant, they were further analyzed using univariate analysis. The Box M statistic was used as the multivariate test for homogeneity of variance. The significance level for all statistical tests was set at \(\alpha = .05\).
CHAPTER IV

DATA ANALYSIS, FINDINGS, AND INTERPRETATIONS

This study was designed to ascertain the perceptions of selected groups toward an alternative model for vocational education in secondary comprehensive schools in Trinidad and Tobago. The groups selected for study were vocational education teachers, academic teachers of the related subjects, secondary comprehensive school principals and vice principals, and vocational education curriculum supervisors.

The following terms are defined to facilitate understanding of their use in the analysis of the data. The term teachers refers to vocational education teachers and academic teachers, classified as one group. Administrator refers to school principals and vice principals, classified as one group. Non-teacher refers to principals, vice principals, and curriculum supervisors, classified as one group. Curriculum supervisor refers to curriculum officers and school supervisors attached to the Division of Technical and Vocational Education and Training, also classified as one group. The term model refers to the thirty-four items that refer directly to the components of and beliefs concerning the proposed model. The model is further
subdivided into three components representing curriculum and instruction, administration and planning, and evaluation.

An analysis of the data for the study is presented in this chapter. Relevant descriptive statistics are utilized and explained where appropriate. Each hypothesis is restated and tested. Tables, accompanied by a narrative, are provided to show the results of the statistical analyses found from testing each of the eight hypotheses. The total number of questionnaires returned by teachers, principals, vice principals, and curriculum supervisors, and the frequency of responses within the demographic subdivisions, are presented in Tables 24 through 31 in Appendix J.

**Hypothesis 1.** There is no significant difference in the perceptions of teachers, administrators, and curriculum supervisors, toward the thirty-four factors within the model.

A comparison of mean scores for teachers, school administrators, and curriculum supervisors, for each of the thirty-four items within the model is presented in Table 1. It should be noted that items 1, 2, 10, 18, 20, 24, and 25, within the model, were stated to reflect belief statements which were opposite to those expressed by the authors of the proposed alternative model. Means at the low end of the measurement scale, therefore, reflected agreement with the principles advocated in the proposed model.
### TABLE 1

COMPARISON OF MEAN SCORES FOR TEACHERS, SCHOOL ADMINISTRATORS, AND CURRICULUM SUPERVISORS ON ALL ITEMS WITHIN THE MODEL

<table>
<thead>
<tr>
<th>Item</th>
<th>Teachers</th>
<th></th>
<th>School Administrators</th>
<th></th>
<th>Curriculum Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
<td>SD</td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>1</td>
<td>246</td>
<td>3.6382</td>
<td>2.1692</td>
<td>21</td>
<td>2.2857</td>
</tr>
<tr>
<td>2</td>
<td>247</td>
<td>3.4413</td>
<td>2.1835</td>
<td>21</td>
<td>2.3333</td>
</tr>
<tr>
<td>3</td>
<td>245</td>
<td>4.8735</td>
<td>2.0853</td>
<td>21</td>
<td>5.4286</td>
</tr>
<tr>
<td>4</td>
<td>242</td>
<td>5.2521</td>
<td>1.9321</td>
<td>21</td>
<td>5.2857</td>
</tr>
<tr>
<td>5</td>
<td>239</td>
<td>5.2887</td>
<td>1.9021</td>
<td>21</td>
<td>5.4762</td>
</tr>
<tr>
<td>7</td>
<td>247</td>
<td>6.2024</td>
<td>1.4140</td>
<td>21</td>
<td>6.0952</td>
</tr>
<tr>
<td>8</td>
<td>244</td>
<td>5.0041</td>
<td>1.8845</td>
<td>20</td>
<td>3.7500</td>
</tr>
<tr>
<td>9</td>
<td>241</td>
<td>5.5270</td>
<td>1.6908</td>
<td>21</td>
<td>5.7143</td>
</tr>
<tr>
<td>10</td>
<td>245</td>
<td>3.9020</td>
<td>1.9202</td>
<td>21</td>
<td>4.4762</td>
</tr>
<tr>
<td>11</td>
<td>244</td>
<td>5.6762</td>
<td>1.5940</td>
<td>21</td>
<td>5.5714</td>
</tr>
<tr>
<td>12</td>
<td>248</td>
<td>6.0403</td>
<td>1.7045</td>
<td>21</td>
<td>6.2381</td>
</tr>
<tr>
<td>13</td>
<td>246</td>
<td>6.1341</td>
<td>1.3829</td>
<td>21</td>
<td>6.1429</td>
</tr>
<tr>
<td>14</td>
<td>248</td>
<td>6.3629</td>
<td>1.2294</td>
<td>20</td>
<td>6.4500</td>
</tr>
<tr>
<td>15</td>
<td>243</td>
<td>5.4897</td>
<td>1.5518</td>
<td>20</td>
<td>5.8000</td>
</tr>
<tr>
<td>16</td>
<td>248</td>
<td>2.4032</td>
<td>2.0417</td>
<td>20</td>
<td>2.3000</td>
</tr>
<tr>
<td>17</td>
<td>243</td>
<td>5.7613</td>
<td>1.5695</td>
<td>20</td>
<td>5.0500</td>
</tr>
<tr>
<td>18</td>
<td>244</td>
<td>1.9344</td>
<td>1.7248</td>
<td>20</td>
<td>2.5500</td>
</tr>
<tr>
<td>19</td>
<td>244</td>
<td>5.5615</td>
<td>1.7381</td>
<td>21</td>
<td>5.2857</td>
</tr>
<tr>
<td>20</td>
<td>244</td>
<td>5.7541</td>
<td>1.5493</td>
<td>21</td>
<td>6.0000</td>
</tr>
<tr>
<td>21</td>
<td>247</td>
<td>5.4277</td>
<td>1.6271</td>
<td>20</td>
<td>5.9500</td>
</tr>
<tr>
<td>22</td>
<td>243</td>
<td>3.9053</td>
<td>2.1035</td>
<td>21</td>
<td>3.2381</td>
</tr>
<tr>
<td>Item</td>
<td>N</td>
<td>Teachers M</td>
<td>SD</td>
<td>School Administrators N</td>
<td>M</td>
</tr>
<tr>
<td>------</td>
<td>----</td>
<td>------------</td>
<td>------</td>
<td>--------------------------</td>
<td>----</td>
</tr>
<tr>
<td>25</td>
<td>245</td>
<td>2.4082</td>
<td>1.8761</td>
<td>21</td>
<td>2.2857</td>
</tr>
<tr>
<td>26</td>
<td>236</td>
<td>5.2881</td>
<td>1.6274</td>
<td>21</td>
<td>5.3810</td>
</tr>
<tr>
<td>27</td>
<td>244</td>
<td>4.6721</td>
<td>1.9392</td>
<td>21</td>
<td>5.0952</td>
</tr>
<tr>
<td>28</td>
<td>243</td>
<td>5.3004</td>
<td>1.7664</td>
<td>20</td>
<td>5.4000</td>
</tr>
<tr>
<td>29</td>
<td>242</td>
<td>5.7190</td>
<td>1.4981</td>
<td>21</td>
<td>5.9524</td>
</tr>
<tr>
<td>31</td>
<td>246</td>
<td>5.4797</td>
<td>1.6180</td>
<td>21</td>
<td>5.8571</td>
</tr>
<tr>
<td>32</td>
<td>245</td>
<td>5.6653</td>
<td>1.5452</td>
<td>21</td>
<td>5.9524</td>
</tr>
<tr>
<td>33</td>
<td>244</td>
<td>6.0205</td>
<td>1.5541</td>
<td>21</td>
<td>6.5238</td>
</tr>
<tr>
<td>34</td>
<td>247</td>
<td>6.3320</td>
<td>1.2636</td>
<td>21</td>
<td>6.3810</td>
</tr>
<tr>
<td>35</td>
<td>245</td>
<td>6.0571</td>
<td>1.4948</td>
<td>21</td>
<td>6.2381</td>
</tr>
<tr>
<td>36</td>
<td>246</td>
<td>5.5528</td>
<td>1.8982</td>
<td>21</td>
<td>6.6190</td>
</tr>
<tr>
<td>39</td>
<td>246</td>
<td>6.0528</td>
<td>1.4768</td>
<td>21</td>
<td>6.3333</td>
</tr>
</tbody>
</table>

*p < .05
One-way analysis of variance was used to test for significant differences in perceptions among the three groups on each item within the model. Significant differences in perceptions of the three groups were found on items 1, 2, 10, and 36 pertaining to timing of students' decision on a career choice, completion time for existing program, main objective of existing program, and students' capability to make informed career choice.

The analysis of variance summary data for questionnaire item 1, which stated that students in the vocational education sector of the senior comprehensive school should be required to make a vocational career choice in the form four year are presented in Table 2. The data indicate that

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F Ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2</td>
<td>64.4813</td>
<td>32.2407</td>
<td>7.1383</td>
<td>.0009</td>
</tr>
<tr>
<td>Within groups</td>
<td>277</td>
<td>1,251.0865</td>
<td>4.5166</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>279</td>
<td>1,315.5679</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
there was a significant difference among the groups
($F = 7.1383, p = .0009$) at $\alpha = .05$. Data in Table 3

**TABLE 3**

SCHIFFÉ'S MULTIPLE RANGE TEST FOR
DIFFERENCE BETWEEN GROUP MEANS
ON TIMING OF CAREER CHOICE

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3—Curriculum supervisors</td>
<td>2.0000</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2—School administrators</td>
<td>2.2857</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1—Teachers</td>
<td>3.6382</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

*Denotes pairs of groups significantly different at $\alpha = .05$.

indicate the result of the Scheffé post hoc multiple comparison procedure which was used to identify pairs of groups in which significant differences existed. Significant differences were found between teachers and school administrators, and also between teachers and curriculum supervisors. School administrators ($M = 2.2857$) and curriculum supervisors ($M = 2.000$) demonstrated a significantly stronger level of disagreement than did teachers ($M = 3.6382$). However, the mean scores of the three groups indicate levels of disagreement with the statement that students in the vocational education sector
in senior comprehensive school should be required to make a vocational career choice in the form four year.

The analysis of variance summary data for questionnaire item 2 are presented in Table 4. There was a significant difference in the perceptions of the three groups toward item 2 which stated that students in the senior comprehensive school should be required to complete the specialized program by the end of the form five year ($F = 7.0936, p = .0010$) at $\alpha = .05$. As shown in Table 5, the Scheffé post hoc multiple comparison procedure showed a significant difference in perceptions between teachers and curriculum supervisors toward completion time for the specialize craft program.

### TABLE 4

**ANALYSIS OF VARIANCE SUMMARY FOR PERCEPTIONS OF THREE GROUPS TOWARD COMPLETION TIME FOR SPECIALIZED CRAFT PROGRAM**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>$F$ Ratio</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2</td>
<td>64.6486</td>
<td>32.3243</td>
<td>7.0936</td>
<td>.0010</td>
</tr>
<tr>
<td>Within groups</td>
<td>278</td>
<td>1,266.7962</td>
<td>4.5568</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>1,331.4448</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 5

Scheffé Multiple Range Test for Difference Between Group Means on Completion Time for Specialized Craft Program

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Group 3</th>
<th>Group 2</th>
<th>Group 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>3—Curriculum supervisors</td>
<td>1.5385</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2—School administrators</td>
<td>2.3333</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1—Teachers</td>
<td>3.4413</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Denotes pairs of groups significantly different at $\alpha = .05$.

Curriculum supervisors ($M = 1.5385$) expressed a significantly stronger level of disagreement than teachers ($M = 3.4413$) that students in the comprehensive schools should be required to complete the specialized craft program by the end of the form five year. However, it should be noted that all three groups expressed levels of disagreement with the view expressed that students in the senior comprehensive schools should be required to complete the specialize craft program by the end of the form five year.

The analysis of variance summary data for item 10, which stated that the main objective of vocational education at the senior comprehensive level should be to prepare the graduate for immediate entry into the world-of-work, are presented in Table 6. A significant difference in
TABLE 6
ANALYSIS OF VARIANCE SUMMARY FOR PERCEPTIONS OF THREE GROUPS ON MAIN OBJECTIVE OF PROGRAM

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F Ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2</td>
<td>43.0708</td>
<td>21.5354</td>
<td>6.0805</td>
<td>.0026</td>
</tr>
<tr>
<td>Within groups</td>
<td>274</td>
<td>970.4382</td>
<td>3.5417</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>276</td>
<td>1,013.5090</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

perceptions was evident between the groups ($F = 6.080, p = .0026$) at $\alpha = .05$. The Scheffe post hoc multiple comparison procedure, as shown in Table 7, revealed that

TABLE 7
SCHEFFE MULTIPLE RANGE TEST FOR DIFFERENCE BETWEEN GROUP MEANS ON MAIN OBJECTIVE OF PROGRAM

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Group 3</th>
<th>Group 2</th>
<th>Group 1</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>3--Curriculum supervisors</td>
<td>3.8462</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2--School administrators</td>
<td>3.7500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1--Teachers</td>
<td>5.0041</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Denotes pairs of groups significantly different at $\alpha = .05$. 
teachers differed significantly from school administrators in their perceptions toward this belief. School administrators (M = 3.7500) expressed a significantly different view from teachers (M = 5.0041). While teachers expressed agreement that the main objective of the vocational education program at the secondary comprehensive school level should be to prepare graduates for immediate entry into the world-of-work, school administrators did not agree.

Data in Table 8 provide the analysis of variance summary data for questionnaire item 36. This item asked respondents their beliefs concerning whether junior secondary graduates were sufficiently familiar with the world-of-work to make an informed vocational career choice in the form four year. This item was worded in a negative form so that the larger the mean score, the stronger the level of disagreement. A significant difference was found among the perceptions of the groups (F = 4.2506, p = .0152). The Scheffé post hoc multiple comparison procedure, as shown in Table 9, revealed that teachers (M = 5.528) differed significantly from school administrators (M = 6.6190). While all groups expressed levels of agreement, school administrators expressed a significantly stronger feeling than teachers that graduates from the junior secondary schools were not sufficiently familiar with the
TABLE 8
ANALYSIS OF VARIANCE SUMMARY FOR PERCEPTIONS
OF THE THREE GROUPS ON STUDENTS' ABILITY
TO MAKE INFORMED CAREER CHOICE

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F Ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2</td>
<td>27.5761</td>
<td>13.7880</td>
<td>4.2506</td>
<td>.0152</td>
</tr>
<tr>
<td>Within groups</td>
<td>277</td>
<td>898.5346</td>
<td>3.2438</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>279</td>
<td>926.1107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 9
SCHEFFÉ MULTIPLE RANGE TEST FOR DIFFERENCE
BETWEEN GROUP MEANS ON STUDENTS' ABILITY
TO MAKE INFORMED CAREER CHOICE

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Group 3</th>
<th>Group 2</th>
<th>Group 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>3--Curriculum supervisors</td>
<td>6.3077</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2--School administrators</td>
<td>6.6190</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1--Teachers</td>
<td>5.5528</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

*Denotes pairs of groups significantly different at α = .05.

world-of-work to make an informed career choice in the form four year.
In summary, significant differences in perceptions were found on four of the thirty-four items within the model. It should be noted that on all statements within the model, both school administrators and curriculum supervisors expressed perceptions which indicated agreement with the general principles expressed by the authors of the proposed alternative model. Teachers, however, expressed perceptions toward items 10 and 12 which were opposite to the general principles inherent in the proposed model. They expressed agreement with item 10, which stated that the main objective of vocational education at the senior comprehensive level should be to prepare graduates for immediate entry into the world-of-work, and disagreement with item 12, which stated that students who opt to begin a new occupational cluster in the form five year should be permitted to do so.

The recoded values for items 1, 2, 10, 18, 20, 24, and 25, within the model, and items 8, 37, and 38 reflecting general impressions, are illustrated in Table 10. These items have been recoded to ensure that their values, used in all further analysis of data, reflect the same direction of magnitude as all other items within the model.

Hypothesis 2. There is no significant difference in the perceptions of teachers, administrators, and curriculum supervisors, toward each of the following three components
### TABLE 10

**COMPARISON OF RECODED MEAN SCORES FOR TEACHERS, SCHOOL ADMINISTRATORS, AND CURRICULUM SUPERVISORS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Teachers</th>
<th>School Administrators</th>
<th>Curriculum Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1</td>
<td>246</td>
<td>4.3618</td>
<td>2.1692</td>
</tr>
<tr>
<td>2</td>
<td>257</td>
<td>4.5587</td>
<td>2.1835</td>
</tr>
<tr>
<td>8</td>
<td>244</td>
<td>4.5984</td>
<td>1.8466</td>
</tr>
<tr>
<td>10</td>
<td>244</td>
<td>2.9959</td>
<td>1.8845</td>
</tr>
<tr>
<td>18</td>
<td>248</td>
<td>5.5968</td>
<td>2.0417</td>
</tr>
<tr>
<td>20</td>
<td>244</td>
<td>6.0656</td>
<td>1.7248</td>
</tr>
<tr>
<td>24</td>
<td>243</td>
<td>4.0947</td>
<td>2.1035</td>
</tr>
<tr>
<td>25</td>
<td>245</td>
<td>5.5918</td>
<td>1.8761</td>
</tr>
<tr>
<td>37</td>
<td>239</td>
<td>4.7155</td>
<td>2.1505</td>
</tr>
<tr>
<td>38</td>
<td>243</td>
<td>5.3786</td>
<td>1.8973</td>
</tr>
</tbody>
</table>

*p < .05
within the model: (a) curriculum and instruction, (b) administration and planning, or (c) evaluation.

Multivariate analysis of variance (MANOVA) was used to test the null hypothesis rather than a separate univariate analysis for each of the different dependent variables. Huck, Cormier, and Bounds (1974) cited two reasons why it is inappropriate to use separate univariate analyses for each dependent variable. First, correlations between the dependent variables are usually something other than zero, which would lead to the probability of a Type I error that may be higher than the level of significance that was used. The second reason is related to the fact that, as the number of dependent variables increases, the probability of finding a significant difference by chance alone also increases, even if all the correlations among the dependent variables are equal to zero.

The Box's M multivariate test for homogeneity of variance was not significant ($F = 1.2229$, $df = 12/1801$, $p = .261$), indicating homogeneity among variances. The MANOVA was found to be nonsignificant ($F = 1.79184$, $df = 6$, $p = .099$) at $a = .05$, using the Wilk's Lambda criterion. The null hypothesis that there is no significant difference in the perceptions of teachers, school administrators, and curriculum supervisors toward the curriculum and instruction, administration and planning, and evaluation
components within the model was therefore retained. Subsequently, no follow-up analysis of the data was performed.

Hypothesis 3. There is no significant difference in the perceptions of vocational education teachers and academic teachers toward each of the following three components within the model: (a) curriculum and instruction, (b) administration and planning, and (c) evaluation.

A t-test was used to test for significant differences between the perceptions of vocational education teachers and academic teachers toward the three components within the model. Data in Table 11 provide the frequencies, means, standard deviations, t-values, and probability for both groups. No significant difference was found between the means of both groups on all three components within the model. The null hypothesis that there is no significant difference in the perceptions of vocational education teachers and academic teachers toward the curriculum and instruction, administration and planning, and evaluations components of the model was therefore retained.

Hypothesis 4. There is no significant difference in the perceptions of vocational education teachers toward the following three components within the model when categorized
TABLE 11

t-TEST FOR VOCATIONAL AND ACADEMIC TEACHERS’ PERCEPTIONS TOWARD CURRICULUM AND INSTRUCTION, ADMINISTRATION AND PLANNING, AND EVALUATION

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Curriculum and Instruction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocational teachers</td>
<td>124</td>
<td>100.50</td>
<td>14.57</td>
<td>.17</td>
<td>.868</td>
</tr>
<tr>
<td>Academic teachers</td>
<td>96</td>
<td>100.19</td>
<td>13.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Administration and Planning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocational teachers</td>
<td>129</td>
<td>41.60</td>
<td>6.86</td>
<td>-.13</td>
<td>.899</td>
</tr>
<tr>
<td>Academic teachers</td>
<td>103</td>
<td>41.72</td>
<td>6.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocational teachers</td>
<td>119</td>
<td>43.36</td>
<td>8.05</td>
<td>-1.13</td>
<td>.261</td>
</tr>
<tr>
<td>Academic teachers</td>
<td>101</td>
<td>44.51</td>
<td>6.96</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

by teaching discipline: (a) curriculum/instruction, (b) administration and planning, and (c) evaluation.

Multivariate analysis of variance was used to test the null hypothesis that there is no significant difference in the perceptions of vocational education teachers when categorized by teaching discipline. The vocational teachers were categorized into the following four teaching
disciplines: (a) agriculture, (b) business studies, (c) home economics, and (d) trade and industry. The Box’s M multivariate test for homogeneity of variance was nonsignificant ($F = 1.59034, df = 18,124, p = .054$) indicating homogeneity among variances. The MANOVA procedure revealed that there was a significant difference in the perceptions of the groups ($F = 2.80174, df = 9, p = .004$) using the Wilk’s Lambda procedure at $\alpha = .05$.

Following the significant Wilk’s Lambda ($p = .004$), a one-way analysis of variance was performed on each component within the model. A significant difference was found in the perceptions of the groups toward the evaluation component of the model ($F = 3.0945, p = .0288$).

The one-way analysis of variance summary data for the evaluation component by the four vocational teaching disciplines are presented in Table 12. There was a significant difference between the perceptions of the groups ($F = 3.0945, p = .0288$). Results of the Tukey post hoc multiple comparison procedure are presented in Table 13. The results identified that there was a significant difference between the perceptions of home economics teachers ($M = 45.6452$) and trade and industry teachers ($M = 41.1143$). These results indicate that home economics teachers differed significantly from trade and industry teachers in their perceptions toward the evaluation
TABLE 12

ANALYSIS OF VARIANCE SUMMARY FOR EVALUATION COMPONENT BY VOCATIONAL DISCIPLINE

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F Ratio</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>3</td>
<td>603.6469</td>
<td>201.2156</td>
<td>3.0945</td>
<td>.0288</td>
</tr>
<tr>
<td>Within groups</td>
<td>149</td>
<td>9,688.4707</td>
<td>65.0233</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>153</td>
<td>10,292.1176</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 13

TUKEY'S MULTIPLE RANGE TEST FOR DIFFERENCE BETWEEN GROUP MEANS FOR VOCATIONAL DISCIPLINES ON THE EVALUATION COMPONENT OF THE MODEL

<table>
<thead>
<tr>
<th>Group</th>
<th>Group Mean</th>
<th>Group 4</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>4—Trade and industry</td>
<td>41.1143</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2—Business studies</td>
<td>42.7561</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3—Home economics</td>
<td>45.6452</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1—Agriculture</td>
<td>45.5455</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Denotes pairs of groups significantly different at α = .05.

component of the model. These means represent the sum of the means for the eight items on the evaluation component.
Hypothesis 5. There is no significant difference between trained and untrained teachers in their perceptions toward the following three components within the model: (a) curriculum and instruction, (b) administration and planning, and (c) evaluation.

A t-test was used to determine whether trained and untrained teachers held significantly different perceptions toward the three categories within the model. The results of the analysis reported in Table 14 indicate that there were no significant differences in the perceptions of trained and untrained teachers toward any of the three components within the model. Both trained and untrained teachers shared the same perceptions of the three components within the model.

Hypothesis 6. There is no significant difference in the perceptions of vocational education teachers toward the following three components within the model when they are classified according to the three ranges of industrial and business experience: (a) curriculum and instruction, (b) administration and planning, and (c) evaluation.

This hypothesis tested whether there was a significant difference in the perceptions of vocational education teachers toward the three components within the model when they were categorized by ranges of experience in business and industry. The following were the three ranges of
TABLE 14

*T-TEST FOR TRAINED AND UNTRAINED TEACHERS' PERCEPTIONS TOWARD THE THREE COMPONENTS WITHIN THE MODEL*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Curriculum and Instruction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trained</td>
<td>191</td>
<td>100.9215</td>
<td>13.676</td>
<td>.01</td>
<td>.992</td>
</tr>
<tr>
<td>Untrained</td>
<td>49</td>
<td>100.8980</td>
<td>14.308</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Administration and Planning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trained</td>
<td>206</td>
<td>42.5874</td>
<td>6.814</td>
<td>1.35</td>
<td>.179</td>
</tr>
<tr>
<td>Untrained</td>
<td>50</td>
<td>41.1600</td>
<td>6.342</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trained</td>
<td>192</td>
<td>44.4063</td>
<td>7.000</td>
<td>1.39</td>
<td>.167</td>
</tr>
<tr>
<td>Untrained</td>
<td>49</td>
<td>42.7551</td>
<td>8.893</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

industrial and business experience: (a) one to five years, (b) six to ten years, and (c) more than ten years.

Multivariate analysis of variance was used to test the hypothesis. The multivariate test for homogeneity of variance yielded a value $F = 1.70061$, $df = 12/59627$, $p = .060$, indicating homogeneity among variances. The multivariate analysis of variance was found to be nonsignificant ($F = .75233$, $df = 6.00$, $p = .608$) using the
Wilk's Lambda criterion. The null hypothesis that there is no significant difference in the perceptions of vocational education teachers toward the three components within the model when classified by business and industrial experience, was, therefore, retained.

**Hypothesis 7.** There is no significant difference in the perceptions of teachers toward the following three components within the model, when they are categorized by the three ranges of teaching experience: (a) curriculum and instruction, (b) administration and planning, and (c) evaluation.

This hypothesis tested whether there was a significant difference in the perceptions of teachers toward the three components within the model when they were categorized according to the three ranges of teaching experience. The three ranges of teaching experience were (a) one to five years, (b) six to ten years, (c) more than ten years.

The multivariate test for homogeneity of variances was found to be \( F = 1.04470 \), \( df = 12/30739 \), \( p = .404 \), indicating homogeneity among variances. The multivariate test of significance was nonsignificant \( (F = 1.30763, df = 6.00, p = .252) \) using the Wilk's Lambda criterion. The null hypothesis that there is no difference in perceptions toward the curriculum and instruction, administration and planning, and evaluation components within the model when teachers
were categorized by the three ranges of professional experience was, therefore, retained.

Hypothesis 8. There is no significant difference in the perceptions of teachers, administrators, and curriculum supervisors, taken as a group, toward the following three components within the model, when categorized by the four ranges of age: (a) curriculum and instruction, (b) administration and planning, and (c) evaluation.

One-way analysis of variance was used to test the hypothesis. The analysis determined whether there was any difference in the perceptions of teachers, administrators, and curriculum supervisors, taken as a group, toward the three components within the model, when categorized by the four age ranges. Data in Table 15 provide the analysis of

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F Ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>3</td>
<td>400.8435</td>
<td>133.6145</td>
<td>2.9458</td>
<td>.0335</td>
</tr>
<tr>
<td>Within groups</td>
<td>259</td>
<td>12148.4335</td>
<td>45.3575</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>262</td>
<td>10423.8122</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
variance data which reveal that there was a significant
difference in perceptions of the administration and planning
component within the model when the combined groups were
categorized by the four age ranges \(F = 2.9458, p = .0335\).
Data in Table 16 reveal the results of the Tukey post hoc
multiple range test. These results indicate that the
youngest group (age range seventeen to twenty-six years)
differed significantly from the oldest group (age range
more than forty-six years), in the level of agreement on the
administration and planning component of the model.

<table>
<thead>
<tr>
<th>Group and Age Range</th>
<th>Mean</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1--17-26 years</td>
<td>40.3333</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2--27-36 years</td>
<td>41.5059</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3--37-46 years</td>
<td>42.3600</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4--46+ years</td>
<td>45.1143 *</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Denotes pairs of groups significantly different at \(\alpha = .05\).

The study also investigated respondents' perceptions of
some indirectly related issues to the model. These items
elicited general impressions which were considered relevant
to the study.

The analysis of the data and findings pertinent to
these items are also presented. One-way analysis of
variance was used to test whether there were significant
differences in the groups' perceptions of the issues
presented. Data in Table 17 show the frequencies, means,
and standard deviations of these six items. Note that the
recoded values for items 8, 37, and 38 are provided in Table
10.

Item 7 stated that junior secondary graduates were not
adequately prepared academically to begin the existing
specialized craft curriculum in the form four year. No
significant difference was found between the groups in their
perceptions toward this item. All groups expressed a high
positive agreement with the statement, teachers $M = 5.5679$,
administrators $M = 5.9048$, and curriculum supervisors $M =
5.5385$.

Item 8 stated that specialized craft vocational
education in the senior comprehensive school was successful
in achieving the goals of the program. The analysis of
variance summary data for item 8 are shown in Table 18. A
significant difference was found in the perceptions of the
groups toward this item ($F = 5.9371$, $p = .0030$).
<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Teachers</th>
<th>School Administrators</th>
<th>Curriculum Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>243</td>
<td>5.5679</td>
<td>1.9663</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>244</td>
<td>3.4016</td>
<td>1.8466</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>244</td>
<td>5.2828</td>
<td>1.5707</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>239</td>
<td>3.2845</td>
<td>2.1505</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>243</td>
<td>2.6214</td>
<td>1.8973</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>242</td>
<td>4.5289</td>
<td>2.0373</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Teachers</th>
<th>School Administrators</th>
<th>Curriculum Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>5.5385</td>
<td>1.9415</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>2.6667</td>
<td>1.3707 *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>5.6154</td>
<td>1.4456</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>2.1818</td>
<td>1.6624</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>2.0000</td>
<td>1.2910</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>4.9167</td>
<td>1.8320</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05
TABLE 18
ANALYSIS OF VARIANCE SUMMARY TABLE FOR PERCEPTIONS
OF THE THREE GROUPS TOWARD EFFECTIVENESS
OF VOCATIONAL EDUCATION PROGRAM

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F Ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2</td>
<td>37.5776</td>
<td>18.7888</td>
<td>5.9371</td>
<td>.0030</td>
</tr>
<tr>
<td>Within groups</td>
<td>274</td>
<td>867.1155</td>
<td>3.1647</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>276</td>
<td>904.6931</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Scheffe multiple range test illustrated in Table 19 reveals a significant difference in perceptions between teachers and school administrators. School administrators

TABLE 19
SCHEFFE'S MULTIPLE RANGE TEST FOR DIFFERENCE
BETWEEN GROUP MEANS ON EFFECTIVENESS
OF VOCATIONAL EDUCATION PROGRAM

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3--Curriculum supervisors</td>
<td>5.3333</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2--School administrators</td>
<td>5.9048</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1--Teachers</td>
<td>4.5984</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

*Denotes pairs of groups significantly different at α = .05.
(M = 5.9048) expressed a significantly stronger level of agreement with the views of the authors of the model, than did teachers (M = 4.5984), that specialized craft vocational education in the senior comprehensive school was not successful in achieving the goals of the program. However, all groups expressed agreement that the program was not achieving its goals. Note that these values are recoded.

Item 30 stated that students exposed to the occupational cluster program may be more readily employable during an economic downturn. There was no significant difference in the perceptions of the three groups toward this statement (F = .2805, p = .7556). All groups expressed a level of agreement with this statement, teachers M = 5.2828, school administrators M = 5.3000, and curriculum supervisors M = 5.6154.

Item 37 stated that there was no need for an alternative program of vocational education in the senior comprehensive schools. Teachers, school administrators, and curriculum supervisors, all expressed a level of disagreement with the view expressed in the statement, teachers M = 3.2845, administrators M = 2.3000, and curriculum supervisors M = 2.1818. All groups expressed the feeling that there was a need for an alternative vocational education program at the secondary comprehensive level.
Item 38 stated that the success rate of senior comprehensive students on the national final craftsman examination is considered acceptable. The analysis of variance summary data in Table 20 illustrate that there was a significant difference in the perceptions of the groups toward this statement ($F = 3.4630, p = .0327$). While teachers, school administrators, and curriculum supervisors, all expressed a fairly high level of disagreement with the statement, school administrators ($\bar{M} = 1.6190$) expressed a significantly stronger level of disagreement than teachers ($\bar{M} = 2.6214$), as illustrated in Table 21.

Item 40 stated that there was widespread dissatisfaction with the specialized craft vocational...
TABLE 21
TUKEY’S MULTIPLE RANGE TEST FOR DIFFERENCE BETWEEN
GROUP MEANS ON ACCEPTABILITY OF SUCCESS AT
NATIONAL FINAL CRAFTSMAN EXAMINATION

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Group 3</th>
<th>Group 2</th>
<th>Group 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>3—Curriculum supervisors</td>
<td>2.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2—School administrators</td>
<td>1.6190</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1—Teachers</td>
<td>2.6214</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Denotes pairs of groups significantly different at $\alpha = .05$.

education program now in use at senior comprehensive
schools. The results of the analysis of variance presented
in Table 22 indicate a significant difference in perceptions
between teachers, school administrators, and curriculum
supervisors on this statement.

Table 23 displays the results of the Tukey HSD
procedure which identified a significant difference between
teachers and school administrators. School administrators
($M = 5.6190$) expressed a significantly stronger feeling than
teachers ($M = 4.5289$) that there was widespread
dissatisfaction with the specialized craft program now in
use at senior comprehensive schools. However, teachers,
school administrators, and curriculum supervisors all
expressed agreement that there was widespread
TABLE 22
ANALYSIS OF VARIANCE SUMMARY FOR IMPRESSIONS REGARDING DISSATISFACTION WITH PROGRAM

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F Ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2</td>
<td>24.0007</td>
<td>12.0004</td>
<td>3.0331</td>
<td>.0498</td>
</tr>
<tr>
<td>Within groups</td>
<td>272</td>
<td>1,076.1666</td>
<td>3.9565</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>274</td>
<td>1,100.1673</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

dissatisfaction with the specialized craft vocational education program now in use at secondary comprehensive schools.

TABLE 23
TUKEY'S MULTIPLE RANGE TEST FOR DIFFERENCE BETWEEN GROUP MEANS ON DISSATISFACTION WITH PRESENT PROGRAM

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Group 3</th>
<th>Group 2</th>
<th>Group 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>3--Curriculum supervisors</td>
<td>4.9167</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2--School administrators</td>
<td>5.6190</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>1--Teachers</td>
<td>4.5289</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Denotes pairs of groups significantly different at $\alpha = .05$. *
Summary

Purpose

Based on the results of the national final craftsman examination, it seems evident that vocational education students at secondary comprehensive schools in Trinidad and Tobago are incapable of coping with the existing specialized craft curriculum. At the same time, developments in technology have suggested that the worker of the future must possess a new set of competencies and foundation skills, and a broader level of skills training (U.S. Department of Labor, 1991).

Many government-appointed committees in Trinidad and Tobago have also recommended that the present specialized vocational program be replaced by a more general and broad-based occupational program. The Report of the Technical Vocational Sub-Committee on Technical Vocational Education in Senior Comprehensive Schools (National Advisory Committee on Education 1989) recognized industry’s current request for multiskilled workers because of the waste of time, and hence
manpower and finance, resulting from over-specialization in distinct craft areas.

There was, therefore, a need for an alternative program that was better suited to the ability level and needs of students. A program that would meet both the entry-level needs of business and industry and help to prepare students for a postsecondary learning experience. It was in response to this need that Atwell, Carrington, and Hernandez, three principals of secondary comprehensive schools, developed an alternative model for the delivery of vocational education at the secondary comprehensive level in Trinidad and Tobago.

The expressed purpose of this investigation was to identify the perceptions of vocational education teachers, academic teachers of related subjects, principals and vice principals of secondary comprehensive schools, and vocational education curriculum supervisors, toward the proposed alternative model for vocational education. The perceptions of the three groups toward basic beliefs related to the proposed alternative model for the vocational education program were also investigated.

Methods and Procedures

Relevant data on the location, area, demography, economy, history, and the past and present educational settings were presented in the introduction. A review of
literature was conducted to collect data on the secondary school system, the vocational education program, and the conceptual framework on which the proposed alternative model was based.

This study was a descriptive research project. The instrument used was developed for the study. It utilized a seven-point Likert-type measurement scale on which respondents were asked to express their levels of agreement or disagreement with the questionnaire statements. The questionnaire was divided in two sections. The first section contained the belief statements inherent in the proposed model. The model was divided into three components reflecting curriculum and instruction, administration and planning, and evaluation. The second section extracted demographic data on the respondents.

The instrument was tested for validity by a jury panel of experts in Trinidad and Tobago. The validated instrument was then field-tested for reliability by a sample extracted from the population to be studied. When the validity and reliability of the instrument had been established, the questionnaire in its final form was returned to Trinidad and Tobago for distribution as directed. The completed questionnaires were then returned for analysis.
Eight null hypotheses were tested to provide comparisons between the perceptions of teachers, administrators, and curriculum supervisors toward the belief statements expressed in the model, and also toward the three components within the model. An attempt was also made to compare some general impressions of the present program and belief statements related to the proposed program.

**Delimitations**

The study was delimited to the vocational education program at secondary comprehensive schools in Trinidad and Tobago. The groups which were surveyed were all directly associated with the delivery of the vocational education program.

**Limitations and Assumptions**

The results of the study do no possess generalizability beyond the vocational education program at secondary comprehensive schools in Trinidad and Tobago. It is assumed that the perceptions expressed represent honest, accurate, and unbiased reactions, and that these reactions constitute valid indicators of the subjects' perceptions toward the model.
Findings

Eight null hypotheses were tested to determine whether there were significant differences in the perceptions of teachers, administrators, and curriculum supervisors toward the proposed alternative model for vocational education. In addition, an effort was made to determine if there were differences in the perceptions of the groups toward the three components of the model when they were categorized by specific demographic variables.

Perceptions of Teachers, Administrators, and Curriculum Supervisors Toward the Thirty-Four Items of the Model

One-way analysis of variance was used to test the hypothesis that there is no significant difference in the perceptions of teachers, administrators, and curriculum supervisors, toward the thirty-four items related to the model. Significant differences in perceptions were found on items pertaining to students having to make vocational career choices, the main objectives of the program, and students’ ability to make an informed career choices.

Item 1 stated that students in the vocational education sector in senior comprehensive schools should be required to make a vocational career choice in the form four year. Teachers held a view which was significantly different from both administrators and curriculum supervisors. While all
three groups expressed levels of disagreement with the statement, school administrators, and curriculum supervisors expressed a significantly stronger level of disagreement than did by the teachers.

Item 2 stated that students in senior comprehensive schools should be required to complete the specialized craft program by the end of the form five year. All three groups, again, expressed disagreement with the statement. Curriculum supervisors however, expressed a significantly stronger belief than teachers that students should not be required to complete the specialized craft program by the end of the form five year.

Item 10 stated that the main objective of vocational education at the senior comprehensive level should be to prepare graduates for immediate entry into the world-of-work. The analysis of the data revealed that school administrators held a significantly different view from teachers. While teachers expressed the view that the main objective of the vocational education program at the senior comprehensive level should be to prepare graduates for immediate entry into the world-of-work, both school administrators and curriculum supervisors disagreed.

Item 36 stated that junior secondary graduates are not sufficiently familiar with the world-of-work to make an
informed career choice in the form four year. Teachers, administrators, and curriculum supervisors were all in agreement with the statement. School administrators however expressed a level of agreement which was significantly higher than teachers on this particular issue.

Perceptions of Teachers, Administrators, and Curriculum Supervisors, Toward the Three Major Components of the Model

Multivariate analysis of variance was used to test the hypothesis that no significant difference existed in the perceptions of teachers, administrators, and curriculum supervisors toward the three major components of the model. No significant differences were found among the perceptions of the groups using the Wilk's Lambda procedure. Therefore, teachers, administrators, and curriculum supervisors shared the same positive perceptions toward the curriculum and instruction, administration and planning, and evaluation components of the model.

Perceptions of Teachers, Administrators, and Curriculum Supervisors, Toward the Three Components of the Model, when Categorized by Demographic Variables

Perceptions of Vocational Education Teachers and Academic Teachers Toward the Three Components of the Model

A t-test was used to test the hypothesis that there is no significant difference in the perceptions of vocational
education teachers and academic teachers toward the three components of the model. The results revealed that there was no significant difference in the perceptions of the two groups of teachers toward the three components of the model. Both groups expressed positive perceptions toward the curriculum and instruction, administration and planning, and evaluation components of the model. The most positive view was expressed on the curriculum and instruction component, followed by the administration and planning, and evaluation components, respectively.

Perceptions of Vocational Education Teachers Toward the Three Components of the Model when Categorized by Teaching Discipline

The results of the multivariate analysis of variance test revealed that significant differences existed among the perceptions of vocational education teachers when they were categorized by teaching discipline. Significant differences in perceptions were found toward the evaluation component of the model. Further analysis revealed that home economics teachers expressed a significantly more positive perception than trade and industry teachers toward the evaluation component of the model. In the final analysis, however, vocational education teachers from the four teaching disciplines expressed positive perceptions toward all three components of the proposed model.
Perceptions of Trained and Untrained Teachers Toward the Three Components of the Model

No significant difference was found in the perceptions of trained and untrained teachers toward the three components of the model. Although both groups expressed positive perceptions toward the three components of the model, however, untrained teachers expressed more positive perceptions than did trained teachers on all three components of the model.

Perceptions of Vocational Education Teachers Toward the Three Components of the Model When Categorized by Industrial and Business Experience

Multiple analysis of variance was used to test whether there were differences in perceptions toward the three components of the model when vocational education teachers were categorized by the three ranges of industrial and business experience. No significant differences in perceptions were found. Vocational education teachers in all ranges of industrial and business experience expressed positive perceptions toward all three components of the model. The mean scores, however, revealed that teachers with the least industrial business experience expressed the strongest positive perceptions toward all three components of the model.
Perceptions of Teachers to the Three Components of the Model when Categorized by the Three Ranges of Teaching Experience

When teachers were categorized by the three ranges of teaching experience, no significant difference was found in their perceptions to any of the three components of the model. However, the mean scores indicated that teachers with the most experience had the most positive perceptions toward all three components of the model.

Perceptions Toward the Model of All Groups Combined and Categorized by Age

A one-way analysis of variance was used to test for significant differences in perceptions when the three groups were combined and categorized according to the four levels of age. Significant differences in perceptions were found between the highest and lowest age ranges of the combined group on the evaluation component of the model. Respondents from all four age ranges of the combined group, however, expressed positive perceptions toward all three components of the model.

Perceptions of Teachers, Administrators, and Curriculum Supervisors, Toward Some Related Issues

No significant differences were found on the three items which related to students’ academic preparedness to begin the specialized craft curriculum in the form four
year, students employability following the occupational
class cluster program, and the need for an alternative vocational
education program for the senior comprehensive school. All
groups expressed levels of agreement on the three items.

There were significant differences in the perceptions of the
three groups toward three of the six items. A significant
difference was found between the perceptions of school
administrators and teachers toward item 8. This item stated
that specialized craft vocational education was successful
in achieving the goals of the program. School
administrators expressed significantly stronger levels of
disagreement with the statement than did teachers. However,
all groups disagreed with the statement that the program was
in fact achieving its goals.

All groups expressed levels of disagreement with the
suggestion that the success rate of senior comprehensive
students at the national final examination was considered
acceptable. School administrators, however, expressed a
significantly higher level of disagreement on that point
than did the teachers.

Item 40 stated that there was widespread
dissatisfaction with the specialized craft vocational
education program in use at senior comprehensive schools.
School administrators expressed a significantly higher level
of agreement than did teachers. However, all groups were in agreement that there was widespread dissatisfaction with the vocational education program now in use in senior comprehensive schools in Trinidad and Tobago.

Conclusions

Based on the findings of this study, the following conclusions are made:

1. Vocational education teachers, academic teachers of related subjects, secondary comprehensive principals and vice principals, and vocational education curriculum supervisors all have positive perceptions toward the underlying principles and components of the proposed alternative model.

2. Where significant differences in perceptions existed, they were, in almost all instances, differences in the level of agreement or disagreement on a particular principle.

3. All groups perceived the specialized craft curriculum in use at secondary comprehensive schools as inappropriate for the targeted student population.

4. Teachers, administrators, and curriculum supervisors, believe that secondary comprehensive students are not academically prepared to pursue the existing specialized craft curriculum.
5. Vocational education teachers and academic teachers of related subjects, share the same positive perceptions toward the proposed alternative model.

6. Home economics teachers were most receptive to the proposed alternative model for the vocational education program. Trade and industry teachers were the least receptive.

7. Having completed a teacher training program did not appear to make a significant difference in teachers' perceptions toward the proposed alternative model. Both trained and untrained teachers shared the same positive perceptions toward the model.

8. The amount of experience in business and industry did not appear to affect the perceptions of vocational education teachers toward the proposed alternative model. Vocational education teachers in all ranges of experience shared the same positive perceptions of the proposed model.

9. The more experience a teacher possessed, the more inclined the teacher was to agree with the principles advocated in the model.

10. Older respondents in the study had more positive perceptions toward the proposed model.
Recommendations

Based on the findings and conclusions of this study, the following recommendations are made:

1. A curriculum model using the occupational cluster approach should replace the existing specialized craft curriculum at secondary comprehensive schools in Trinidad and Tobago.

2. The existing specialized craft program should be phased out, over a period of time, from the curriculum of the regular day-school program at secondary comprehensive schools.

3. There should be articulation between the junior secondary and the secondary comprehensive schools with regard to the curriculum content of vocational technical education programs at both schools.

4. Vocational education students in secondary comprehensive schools should not be required to make a vocational career choice in the form four year.

5. The vocational education program should emphasize a sound general education, including the development of basic skills.

6. The proposed vocational education program should provide an opportunity for vocational education teachers to participate in business and industrial internships.
7. A cooperative education program should be set up between the business and industry sectors and education to provide occupational exposure for those students who may wish to enter the world-of-work immediately after graduation.

8. Workshop sessions should be arranged as an ongoing process, so that teachers, school administrators, curriculum supervisors, and experts from business, industry, and labor can work together in developing the most appropriate curriculum for vocational education in the secondary comprehensive schools in Trinidad and Tobago.

9. In-service training and workshop sessions should be planned and provided to discuss and debate the philosophy for, and operation of, the proposed alternative model and its three major components.

10. A public relations program should be developed to inform parents, and the public at large, of the advantages of the proposed alternative model.

11. In-service educational opportunities should be provided to upgrade teachers' skills in utilizing technology and other innovative approaches to classroom, laboratory, and workshop instruction.
Recommendations for Additional Research

The following recommendations are made for future research:

1. A study should be conducted to determine the perceptions of leaders in the business, industrial, and labor sectors toward the proposed alternative model.

2. A study should be conducted to determine the basic skills and entry-level occupational skills which the business and industrial sectors deem to be essential.

3. A needs analysis should be conducted in the business and industrial sectors to identify new and emerging technologies and employment trends that can be expected to prevail during the remainder of the decade and into the upcoming twenty-first century.

4. A study should be conducted to determine the operational principles of a model for a cooperative education program.

5. A study should be conducted to determine the perceptions of past vocational education students toward the proposed model.

6. A study should be conducted among leaders in business, industrial, and labor sectors to identify the competencies required to meet certification standards for
the agricultural, business studies, trade and industry, and home economics occupations.
APPENDIX A

SECONDARY COMPREHENSIVE SCHOOL CURRICULUM
ACADEMIC

1. English
2. Mathematics
3. Sciences
4. Social Studies
5. Foreign Languages

PRETECHNICIAN COURSES

1. Agriculture
2. Clothing and Textiles
3. Creative Arts
4. Food and Nutrition
5. General Electricity
6. Home Management
7. Metals
8. Office Procedures
9. Principles of Accounting
10. Principles of Business
11. Shorthand
12. Technical Drawing
13. Typing
14. Woods

SPECIALIZED CRAFT VOCATIONAL COURSES

1. Agriculture
2. Air Conditioning & Refrigeration
3. Auto & Diesel
4. Auto General
5. Beauty Culture
6. Cabinet Making
7. Clerk/Typist
8. Construction Carpentry & Joinery
9. Domestic Electronics Servicing
10. Dressmaking (Basic)
11. Electrical Installation
12. Food Preparation
13. General Draughting
14. Housekeeper’s Craft
15. Machine Shop
16. Masonry
17. Plumbing
18. Shorthand/Typist
19. Tailoring
20. Welding
APPENDIX B

NATIONAL EXAMINATION RESULTS 1980-1988

SPECIALIZED CRAFT FULL- AND PART-TIME
# National Examination Results 1980-1988

Specialized Craft Full- and Part-Time

<table>
<thead>
<tr>
<th>Year</th>
<th>Secondary School Sector</th>
<th>Technical Institute</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Sat</td>
<td>Passed</td>
</tr>
<tr>
<td>1980</td>
<td>2595</td>
<td>55</td>
</tr>
<tr>
<td>1981</td>
<td>2000</td>
<td>91</td>
</tr>
<tr>
<td>1982</td>
<td>2940</td>
<td>156</td>
</tr>
<tr>
<td>1983</td>
<td>2698</td>
<td>184</td>
</tr>
<tr>
<td>1984</td>
<td>3205</td>
<td>244</td>
</tr>
<tr>
<td>1985</td>
<td>2998</td>
<td>263</td>
</tr>
<tr>
<td>1986</td>
<td>3260</td>
<td>470</td>
</tr>
<tr>
<td>1987</td>
<td>2700</td>
<td>339</td>
</tr>
<tr>
<td>1988</td>
<td>2880</td>
<td>365</td>
</tr>
</tbody>
</table>

APPENDIX C

SAMPLE CLUSTER PROGRAM FOR TRADE AND

INDUSTRY ENGINEERING CRAFTS
Sample Cluster Program
for Trade and Industry Engineering Crafts

YEAR 4 DIAGNOSTIC

<table>
<thead>
<tr>
<th>SUBJECTS</th>
<th>PERIODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop (Cluster)</td>
<td>12</td>
</tr>
<tr>
<td>Technology (Cluster)</td>
<td>3</td>
</tr>
<tr>
<td>English Language</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics</td>
<td>4</td>
</tr>
<tr>
<td>Science</td>
<td>3</td>
</tr>
<tr>
<td>Social Studies</td>
<td>3</td>
</tr>
<tr>
<td>Technical Drawing</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>Library</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>35</td>
</tr>
</tbody>
</table>

YEAR 5-INTERMEDIATE

<table>
<thead>
<tr>
<th>SPECIALIZED CRAFT</th>
<th>ALTERNATIVE PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop</td>
<td>14 1. Continue clusters to higher level.</td>
</tr>
<tr>
<td>Technology</td>
<td>3   2. Transfer to new cluster area.</td>
</tr>
<tr>
<td>English Language</td>
<td>3   3. Continue in single specialized craft, mainly workshop with further remedial as necessary.</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Science</td>
<td>3</td>
</tr>
<tr>
<td>Social Studies</td>
<td>3</td>
</tr>
<tr>
<td>Technical Drawing</td>
<td>3</td>
</tr>
<tr>
<td>Library</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>35</td>
</tr>
</tbody>
</table>

POST SECONDARY OPTIONS

1. (Years 1, 2 or 3 part time classes at Comprehensive schools)
2. Technical Institutes full or part time
3. Vocational Center full time or part time
4. Proposed community colleges full or part time

ENTRY TO WORLD-OF-WORK
APPENDIX D

CORRESPONDENCE
Permanent Secretary  
Ministry of Education  
Alexandra Street  
St Clair, Port-of-Spain.

Dear Sir:

I have completed the course-work requirements for the Ph.D degree in technical/vocational education and I am at present developing the dissertation proposal.

As the principal of a senior comprehensive school and a former member of the National Training Board, I have always had a very keen interest in the development of an alternative model for the vocational education program in senior comprehensive schools.

My study is aimed at ascertaining the views of vocational teachers, academic teachers who teach related subjects to vocational students, comprehensive school administrators, and vocational curriculum supervisors, toward the various aspects of a proposed alternative model. Basically, the model proposes generalized occupational clusters with a diagnostic remedial approach at the form 4 level.

I therefore humbly seek your permission to administer a questionnaire to a random sample of the groups mentioned above.

I thank you in anticipation for your favorable response.

Sincerely,

Jason F. Hernandez
Dear Colleague:

I am at present developing the proposal for my doctoral dissertation. The study is aimed at ascertaining the perceptions of certain selected groups toward an alternative model for vocational education at senior comprehensive schools in Trinidad and Tobago.

I seek your assistance with the validation of the survey instrument. Please rate the statements on the attached questionnaire according to their degree of appropriateness, and also make any suggestion which you feel will contribute to the validity of the instrument.

Thanks for your valuable time and cooperation. I will be most willing to share the results of this research project with you upon request.

Sincerely,

Jason F. Hernandez
Dear:

Please allow me the opportunity to thank you once more for agreeing to assist me with the distribution and retrieval of my survey instrument.

I would appreciate if you would follow as closely as possible the guidelines listed below:

1. Phone the Principal of the ................. Comprehensive School and make an appointment to see him/her. During that phone conversation, obtain from the principal a rough estimate of the total number of vocational teachers, and academic teachers who teach related subjects to vocational education students. This number should be about 40.

2. When you visit the school and introduce yourself, give the principal the letter from me to him/her and the batch of questionnaires for that school.

3. Inform the principal that you will return in two weeks to collect the completed questionnaires.

4. Phone the principal two or three days before the expiration of the two-week period to remind him/her of your return visit.

5. If the return rate is greater than 70%, you may or may not return to collect the remainder.

6. If the return rate is less than 70%, inform the principal that you will return a week later to collect the remaining questionnaires.

7. Give all the completed questionnaires to Mrs. Greaves who will transmit them to me.

Thanks again for your most valuable assistance. I will be most willing to discuss the findings with you on completion of the study.

Sincerely,

Jason F. Hernandez
Dear :

Best wishes to you, your staff and student-body. I am in the process of writing a dissertation which requires that I ascertain the perceptions of certain selected groups toward an alternative model for vocational education at the senior comprehensive level.

I would therefore appreciate if you would be kind enough to complete one of the enclosed questionnaires, and ask the same of your vice-principal, technical/vocational teachers, and academic teachers who teach related subjects to specialized craft students.

The bearer .................... has very willingly agreed to assist me with this research project, and will return in two weeks to collect the completed questionnaires.

I thank you in advance for your valuable time and cooperation. I will be most willing to make a copy of the findings available to you upon request.

Sincerely,

Jason F Hernandez.
Dear :  

Best wishes to you, your staff and student-body. I am in the process of writing a dissertation which requires that I ascertain the perceptions of certain selected groups towards an alternative model for vocational education at the senior comprehensive level.

I would therefore appreciate if you would be kind enough to complete one of the enclosed questionnaires, and ask your vice principal to do likewise.

The bearer ..................... has very willingly agreed to assist me with this research project, and will return in two weeks to collect the completed questionnaires.

I thank you in advance for your valuable time and cooperation. I will be most willing to make a copy of the findings available to you upon request.

Sincerely,

Jason F Hernandez.
Dear Teacher:

I am in the process of writing a dissertation and your expertise in the field will be of invaluable assistance to me. The study requires that I ascertain your perceptions toward certain aspects of an alternative model for specialized craft vocational education at the senior comprehensive level.

I would appreciate if you would be kind enough to give an honest and unbiased reaction to each statement on the attached questionnaire. When you are complete, seal the questionnaire in the envelope provided and return to your principal as soon as is possible.

I thank you for your precious time and co-operation, and will be willing to make a copy of the findings available to you upon request.

Sincerely,

Jason F Hernandez.
Curriculum Officer
Tech./Voc. Education and Training
Richmond Street
Port-of-Spain.

Dear Colleague:

I am in the process of writing a dissertation and your expertise in the field will be of invaluable assistance to me. The study requires that I ascertain the perceptions of selected groups toward certain aspects of an alternative model for vocational education at the senior comprehensive level.

I would appreciate therefore if you would be kind enough to give an honest and unbiased reaction to each statement on the attached questionnaire. When you are complete, please seal the questionnaire in the envelope provided and return to the research coordinator.

Thanks for your valuable time and cooperation. I will be most willing to share the findings of this study with you upon request.

Sincerely,

Jason F. Hernandez
Mr. Jason Hernandez  
524A South Carroll Boulevard #109  
Denton  
Texas 76201  
U.S.A.

Dear Mr. Hernandez,

I acknowledge your letter dated August 26, 1991 and wish to inform you that this Ministry will be happy to oblige in this exercise.

However, I shall be grateful if you could forward for my perusal, a copy of the dissertation proposal and a copy of the proposed questionnaires.

Yours sincerely,

[Signature]

Director of School Supervision (Ag.)  
for Permanent Secretary  
Ministry of Education
Dear Principal,

Approval is given by the Ministry of Education for Mr. Jason Hernandez or his representative to contact Principals of Secondary Schools with a view to presenting a questionnaire to students and teachers for answers which would assist him in his research towards a Post Graduate Degree at the University of North Texas, Denton, Texas.

Any courtesies that could be extended to Mr. Hernandez would be appreciated by this Ministry.

Yours faithfully,

L. Cloyd Crosby
Director of School Supervision (Ag)
for Permanent Secretary
Ministry of Education
University of North Texas Institutional Review Board
for the Protection of Human Subjects in Research (IRB)
APPLICATION FOR APPROVAL OF INVESTIGATION
INVOLVING THE USE OF HUMAN SUBJECTS

This application should be submitted to the Office of Research Administration, Room 310, Administration Building or P.O. Box 5396, Denton, TX 76203-5396.

1. Principal Investigator's Name: Jason F. Hernandez

Department & Campus Address: Vocational Technical Education

Campus Phone No.: Home No.: 512-271-1111

2. If you are a student, provide the following:

Home Address of Student: 524A So College Blvd... Phone Ext.: 5

Name of Faculty Sponsor: ____________ Phone Ext.: ___

Is this your thesis or dissertation research? Yes / No

3. Title of Project: Teachers', Administrators' and Supervisors' Perceptions Toward an Alternative Model for Vocational Education at Senior High School: Comprehensive Schools in Trinidad and Tobago


5. Is a proposal for external support being submitted? Yes / No

If "Yes," you must submit one complete copy of that proposal as soon as it is available and complete the following:

a) Is notification of Hum. Subj. Approval Required? Yes / No

b) Is this a renewal application? Yes / No

c) Funding agency's name:

6) In making this application, I certify that I have read and understand the guidelines and procedures developed by the University for the protection of human subjects, and I fully intend to comply with the letter and spirit of the University's Assurance and policy. I further acknowledge my responsibility to report any significant changes in the protocol, and to obtain written approval for these changes, in accordance with the procedures, prior to making these changes. I understand that I cannot initiate any contact with human subjects before I have received approval and/or complied with all contingencies made in connection with that approval.

Signature of Principal Investigator: __________________________ Date: __________

7) Approval by Faculty Sponsor (required for all students): I affirm the accuracy of this application, and I accept the responsibility for the conduct of this research and supervision of human subjects as required by law.

Signature of Faculty Sponsor: __________________________ Date: __________
October 28, 1991

Jason Hernandez
524A South Carroll Blvd. #109
Denton, TX 76201

Dear Mr. Hernandez:

Your proposal entitled "Teachers Administrators and Supervisors Perceptions Toward and Alternative Model for Vocational Education At Senior Comprehensive School in Trinidad and Tobago," has been approved by the IRB and is exempt from further review under 45 CFR 46.101, Exemption #2.

If you have any questions, please contact me at (817) 565-3946.

Good luck on your project.

Sincerely,

Peter Witt, Chair
Institutional Review Board

PW/t1
APPENDIX E

VALIDATION INSTRUMENT
DIRECTIONS

Please read the forty statements on the attached sample questionnaire and rate each according to the following code:

1 - totally inappropriate
2 - not appropriate
3 - somewhat appropriate
4 - very appropriate

You may also make any comment you wish in the space provided.

<table>
<thead>
<tr>
<th>No.</th>
<th>Rating</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>_____</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>_____</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX F

QUESTIONNAIRE
A SURVEY OF TEACHERS', ADMINISTRATORS' & SUPERVISORS' PERCEPTIONS
OF AN ALTERNATIVE MODEL FOR VOCATIONAL EDUCATION
AT SENIOR COMPREHENSIVE SCHOOLS
IN TRINIDAD AND TOBAGO

INSTRUCTIONS: Please read each statement carefully and circle the number to the right which best reflects your opinion according to the following scale.

STRONGLY DISAGREE    STRONGLY AGREE
1  2  3  4  5  6  7

DEFINITIONS: Occupational Cluster - A group of related courses characterized by their common sharing of a similar content or information base; e.g. masonry, plumbing & carpentry.

Intermediate Program - A vocational education program which is based on a portion of the complete specialized craft syllabus and which is pursued in the form 5 year by those students who qualify at the end of the form 4 year.

1. Students in the vocational education sector in senior comprehensive schools should be required to make a vocational career choice in the form 6 year.
2. Students in senior comprehensive schools should be required to complete the specialized craft program by the end of the form 5 year.
3. A program based on occupational clusters rather than single-craft specializations may be more appropriate at the senior comprehensive level.
4. Only those students who successfully complete the first year of the occupational cluster program should be allowed to begin the intermediate program.
5. The occupational cluster program should continue at a higher level in the form 5 year for those students who opt for it.
6. There should be cooperative education programs between the school and the business and industrial sectors.
7. Junior secondary graduates are not adequately academically prepared to begin the existing specialized craft curriculum in the form 4 year.
8. Specialized craft vocational education in the senior comprehensive is successful in achieving the goals of the program.
9. Vocational teachers should be permitted to make an input in the development of the curriculum through a process of consultation and consensus.
10. The main objective of vocational education at the senior comprehensive level should be to prepare the graduate for immediate entry into the world of work.
11. The team-teaching approach should be utilized in the delivery of the occupational cluster program.

PLEASE GO TO PAGE 2
12. Students who opt to begin a new occupational cluster in the Form 5 year should be permitted to do so.

13. The occupational cluster approach may assist students in being better able to identify a single vocational career choice at a later date.

14. Remedial courses should be provided for Form 4 vocational education students who are diagnosed as deficient in the basic skills.

15. On-the-job training should be an integral component of the vocational education program.

16. Updating the vocational education curriculum should be an ongoing feature of proper educational planning.

17. There should be a greater concentration of general education on the vocational education curriculum.

18. Experts from the business and industrial sectors should have an input in the development of vocational education curriculum.

19. There should be a vocational education program which provides some degree of specialization for students who wish to enter the world of work immediately after graduation.

20. The national craftsman final examination should be set by one individual.

21. The senior comprehensive should be a venue at which students can pursue studies after the Form 5 year for the specialized craft final examination.

22. Students should be evaluated on a continuous basis during the Form 6 year.

23. Student placement in the Form 5 year should be based on an evaluation of overall performance in the Form 4 year.

24. The present specialized craft final examination should be retained at the senior comprehensive level as a Form 5 terminal examination.

25. The needs of industry are not relevant to the vocational education curriculum.

26. The Form 5 specialized craft final examination should be at an intermediate level which covers an appropriate portion of the complete syllabus as mandated by the competent authority.

27. Some Form 5 vocational education students should be allowed to pursue a non-examination single-craft specialization.

28. Students who pursue a non-examination single-craft specialization should be certified through the use of a skills profile chart.

29. Students who are successful at the intermediate level examination should be certified accordingly by the competent authority.

30. Students exposed to the occupational cluster program may be more readily employable during an economic downturn.

31. There should be strong emphasis on the practical component of non-examination single-craft specializations.

32. Remedial work should be provided as necessary in the non-examination single-craft specializations.

PLEASE GO TO PAGE 3
33. Questions for the national craftsman final examination should be drawn from a bank of valid and reliable questions.

34. The curriculum should be periodically revised to meet the needs of business and industry.

35. There should be diagnostic evaluation of students' interest and aptitude before they are admitted to vocational education programs.

36. Junior secondary graduates are not sufficiently familiar with the world of work to make an informed vocational career choice in the Form 4 year.

37. There is no need for an alternative program of vocational education in the senior comprehensive schools.

38. The success rate of senior comprehensive students on the national final craftsman examination is considered acceptable.

39. A three year period would be more adequate for senior comprehensive students to complete the specialized craft syllabus.

40. There is widespread dissatisfaction with the specialized craft vocational education program now in use at senior comprehensive schools.

DEMOGRAPHICS: Please check (x) the space next to the value or category which best describes you.

<table>
<thead>
<tr>
<th>OCCUPATIONAL CATEGORY</th>
<th>VOCATIONAL DISCIPLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teacher</td>
<td>1. Agriculture</td>
</tr>
<tr>
<td>2. Principal</td>
<td>2. Business Studies</td>
</tr>
<tr>
<td>3. Vice Principal</td>
<td>3. Home Economics</td>
</tr>
<tr>
<td></td>
<td>5. Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEACHER CLASSIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaches technical vocational subjects</td>
</tr>
<tr>
<td>2. Teaches related academic subjects</td>
</tr>
<tr>
<td>3. Not Applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEACHER CERTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Trained</td>
</tr>
<tr>
<td>2. Untrained</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEACHING/ADMINISTRATIVE EXPERIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1 - 5 years</td>
</tr>
<tr>
<td>2. 6 - 10 years</td>
</tr>
<tr>
<td>3. 10 + years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDUSTRIAL/BUSINESS EXPERIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1 - 5 years</td>
</tr>
<tr>
<td>2. 6 - 10 years</td>
</tr>
<tr>
<td>3. 10 + years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 17 - 26 years</td>
</tr>
<tr>
<td>2. 27 - 36 years</td>
</tr>
<tr>
<td>3. 37 - 46 years</td>
</tr>
<tr>
<td>4. 46 + years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GENDER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Male</td>
</tr>
<tr>
<td>2. Female</td>
</tr>
</tbody>
</table>

THANK YOU! Please return the questionnaire as soon as possible.
APPENDIX G

MECHANICAL CLUSTER AND RELATED MODULES

PILOT PROJECT—TRINIDAD AND TOBAGO
MECHANICAL CLUSTER
(Auto-mechanics, Machine Shop, Welding)

AUTO-MECHANICS

Outline of competencies to be attained in the programme

MODULE I: USE AND CARE GARAGE TOOLS AND EQUIPMENT

Unit No.
01: Use and care hand tools.
02: Use and care measuring tools and equipment.
03: Use and care brake drum and brake-shoe reconditioning machine.

MODULE II: TEST AND TUNE SPARK-IGNITION ENGINES

Unit No.
01: Use and care tuning equipment.
02: Service distributor.
03: Clean and adjust spark plugs.
04: Re-time engine ignition.
05: Adjust valve tappet-clearance.
06: Check battery electrolyte level and condition of terminals.

MODULE III: MAINTAIN AND REPAIR BRAKING SYSTEMS

Unit No.
01: Explain the functions of braking systems.
02: Identify common problems associated with braking systems.
03: Repair mechanical brakes.
04: Repair hydraulic brakes.
05: Overhaul and repair disc brakes.

MACHINE SHOP

Outline of competencies to be attained in the programme.

MODULE I: OBSERVE/APPLY SAFETY PRECAUTIONS/PRACTICES

Unit No.
01: Outline relevant safety precautions.
02: Apply relevant safety precautions.
03: Demonstrate good housekeeping practices.
MODULE II: PERFORM BENCH-FITTING OPERATIONS

Unit No.
01: Apply relevant safety precautions.
02: Identify and use marking layout tools.
03: Cut metal to required shapes and sizes.
04: Cut light and heavy-gauge metal.
05: Prepare finished surface by filing.

MODULE III: OPERATE DRILLING MACHINE

Unit No.
01: Apply safety precautions when drilling.
02: Select and use drill bits.
03: Identify various drilling machines.
04: Operate drilling machine to perform specific operations.

MODULE IV: CUT THREADS BY HAND

Unit No.
01: Apply safety precautions when hand-threading.
02: Cut internal threads.
03: Cut external threads.
04: Check threads for accuracy.

MODULE V: OPERATE CENTER LATHE

Unit No.
01: Apply safety precautions when using the center lathe.
02: Identify parts of the center lathe.
03: Set up workpiece on the center lathe.
04: Face workpiece.
05: Perform parallel turning.
06: Center-drill workpiece.
07: Turn workpiece between chuck and dead center.
08: Turn workpiece between lathe centers.
09: Drill and bore workpiece.
10: Knurl workpiece.
11: Cut internal and external threads.
12: Part off workpiece.
13: Select appropriate cutting fluids.

MODULE VI: IDENTIFY COMMON MATERIAL

Unit No.
01: Identify and select common ferrous and non-ferrous materials.
02: Identify common non-metallic materials.
MODULE VII: IDENTIFY, SELECT AND USE MEASURING TOOLS AND PRECISION INSTRUMENTS

Unit No.
01: Identify, select and use various measuring tools.
02: Identify, select and use precision instruments.

MODULE VIII: PERFORM SHEET-METAL OPERATIONS

Unit No.
01: Apply relevant safety precautions.
02: Identify and use sheet-metal tools.
03: Make simple sheet-metal layout.
04: Make simple sheet-metal development.
05: Identify method of fastening sheet-metal.

WELDING

Outline of competencies to be attained in the programme

MODULE I: OBSERVE/APPLY SAFETY PRECAUTIONS/PRACTICES

Unit No.
01: Identify basic safety rules.
02: Outline good housekeeping practices.
03: Identify and use different types of extinguisher.
04: Identify safe methods of handling hot material.
05: Apply first aid to cuts and burns.
06: Apply first aid for electric shock.
07: List suitable clothing and items of personal gear.
08: Insulate exposed electrical conductors and identify other hazards.
09: Prepare vessels, holds and tanks for internal welding.
10: Prepare containers of combustible substances for welding.
11: Lay out welding shop for work performance.

MODULE II: CARE AND MAINTAIN EQUIPMENT

Unit No.
01: Service torch, welding tips and cutting tips.
02: Inspect oxy-acetylene hoses for damage and leaks.
03: Check regulator outer seals and connectors.
04: Check electrical cables and connections.
05: Care and maintain arc-welding accessories.
MODULE III: WELD METALS USING OXY-ACETYLENE FLAME

Unit No.
01: Set up gas-welding equipment.
02: Weld without filler rod.
03: Weld in flat position with filler rod.
04: Cut plates and structural sections.
05: Weld light sheets using bronze-welding method.
06: Fabricate units using light sections.

MODULE IV: WELD METALS USING ELECTRIC ARC

Unit No.
01: Explain arc-welding terminology.
02: Strike and maintain arc.
03: Make fillet and butt weld.
04: Perform resistance welding.
05: Weld light sheet and sections.
06: Perform elements of fabrication.
APPENDIX H

WORKPLACE COMPETENCIES AND FOUNDATIONS
FIVE COMPETENCIES

Resources: Identifies, organizes, plans, and allocates resources

A. Time - Selects goals-relevant activities, ranks them, allocates time, and prepares and follows schedules
B. Money - Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives
C. Material and Facilities - Acquires, stores, allocates, and uses materials or space efficiently
D. Human Resources - Assesses skills and distributes work accordingly, evaluates performance and provides feedback

Interpersonal: Works with others

A. Participates as Member of a Team - contributes to group effort
B. Teaches Others New Skills
C. Serves Clients/Customers - works to satisfy customers' expectations
D. Exercises Leadership - communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies
E. Negotiates - works toward agreements involving exchange or resources, resolves divergent interests
F. Works with Diversity - works well with men and women from diverse backgrounds

Information: Acquires and uses information

A. Acquires and Evaluates Information
B. Organizes and Maintains Information
C. Interprets and Communicates Information
D. Uses Computers to Process Information

Systems: Understands complex inter-relationships

A. Understands Systems - knows social, organizational, and technological systems work and operates effectively with them
B. Monitors and Corrects Performance - distinguishes trends, predicts impacts on system operations,
diagnoses deviations in systems' performance and corrects malfunctions

C. Improves or Designs Systems—suggests modifications to existing systems and develops new or alternative systems to improve performance

Technology: Works with a variety of technologies

A. Selects Technology—chooses procedures, tools or equipment including computers and related technologies

B. Applies Technology to Task—Understands overall intent and proper procedures for setup and operation of equipment

C. Maintains and Troubleshoots Equipment—Prevents, identifies, or solves problems with equipment, including computers and other technologies
A THREE-PART FOUNDATION

Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens and speaks

A. Reading—locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules
B. Writing—communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts
C. Arithmetic/Mathematics—performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques
D. Listening—receives, attends to, interprets, and responds to verbal messages and other cues
E. Speaking—organizes ideas and communicates orally

Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons

A. Creative Thinking—generates new ideas
B. Decision Making—specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative
C. Problem Solving—recognizes problems and devises and implements plan of action
D. Seeing Things in the Mind’s Eye—organizes, and processes symbols, pictures, graphs, objects, and other information
E. Knowing How to Learn—uses efficient learning techniques to acquire and apply new knowledge and skills
F. Reasoning—discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem

Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, and integrity and honesty

A. Responsibility—exerts a high level of effort and perseveres towards goal attainment
B. Self-Esteem—believes in own self-worth and maintains a positive view of self
C. Sociability—demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings
D. Self-Management—assesses self accurately, sets personal goals, monitor progress, and exhibits self-control
E. Integrity/Honesty—chooses ethical courses of action
OFFICE SYSTEMS PROGRAM CONFIGURATION OPTIONS

Listed below are three program configuration options for Office System programs. The minimum program includes only the four credits required for Office Systems cluster approval. Configuration options 2 and 3 provide a more comprehensive approach to program planning for competency-based education.

Minimum Criteria-Option 1

Communications & Technology  
Word Processing I & II  
Office Procedures  
Bookkeeping/Recordkeeping  
Business Information Processing I  
Business Machines/Math  
Cooperative Work Experience

Option 2

Communications & Technology  
Word Processing I & II  
Office Procedures  
Bookkeeping/Recordkeeping  
Business Machines/Math  
Vocational Shorthand  
Business Information Processing I & II  
Cooperative Work Experience

Option 3

Communications & Technology  
Word Processing I & II  
Office Procedures  
Bookkeeping/Recordkeeping  
Business Machines/Math  
Vocational Shorthand  
Business Information Processing I & II  
Cooperative Work Experience

Course Titles and Descriptions

Communications and Technology
This course is designed to teach verbal, nonverbal and written communications. Basic and related English/writing skills will be taught and reinforced.

Competencies taught:

• Oral presentation skills.
• Listening skills.
• Grammar, punctuation and spelling skills.
• Nonverbal and professional image skills.
• Composition skills (dictation and written).
• Edit and revise written communications.
• Written communication/business letters and documents.
• Business protocol and etiquette.
• Communication techniques for three office system models.
• Basic judgment and decision-making skills.

Credit for English/writing is encouraged by specific competency matching of common curriculum goals. Machine transcription could be taught in this course. The use of computer technology and electronic typewriters is encouraged as a mode to learning and application of these skills.

Word Processing I & II

Prerequisite: Operation of Keyboard by Touch (initial instruction)

These courses are designed to teach basic and advanced skills through the manipulation of processing equipment: electronic typewriters, microcomputers, and computer systems.

Competencies taught:

• Operate all alpha and numeric/symbol keys by touch.
• Know basic operation of function keys and machine parts.
• Proper keyboarding techniques.
• Apply word division and punctuation rules.
• Apply document formatting skills.
• Input rough draft copy and apply proofreading techniques.
• Enhance business documents.
• Prioritized tasks and apply workflow techniques.
• Editing and revision, judgment and decision-making skills.
• Apply correct punctuation, grammar and spelling rules.
• Perform speed and accuracy standards.
• Meet production standard for mailable/correctable documents.
Credit for English/writing is encouraged by specific competency matching of common curriculum goals.

Business Machines/Math

This course is designed to teach a variety of machines used in the modern office. Major focus, however, should be placed on the electronic calculator and basic math skills.

Competencies taught:

- Operation of electronic calculator by touch.
- Application of business math skills: convert fractions, decimals and percentages to equivalent forms.
- Application of computational skills to recordkeeping/bookkeeping tasks.
- Specific skill building techniques per machine.
- Operation of reprographic (electronic and electric) equipment.
- Machine transcription skills (manipulation of recorder and transcriber).
- Performance of speed and accuracy standards.

Credit for math is encouraged through competency matching of common curriculum goals.

Office Procedures

This course is designed to teach job specific duties and related tasks in a series of steps followed in a regular defined order which dictate how office workers perform their functions.

Competencies taught:

- Performance of telephone techniques.
- Human relations skills.
- Machine transcription and dictation skills.
- Records management (filing skills).
- Electronic communication processes (use of network).
- Workflow processes (simulated environment).
- Organizational and management skills.
- Mail responsibilities.
- Reprographic skills.
- Identification of office occupations.
- Problem-solving, decision-making and critical-thinking skills.
- Acquisition of job search skills.
- Identify types of office systems and procedures.
Simulated business environments are encouraged to enhance the procedures cycle and paper process of an actual office setting.

Vocational Shorthand

This course may utilize a variety of shorthand systems and teaching styles. Communication skills should be taught and reinforced in this course.

Competencies taught:

. Dictation skills.
. Transcription skills.
. Speed and accuracy standards.
. Business English and writing skills.

Credit for English/writing is encouraged by specific competency matching to common curriculum goals.

Business Information Processing I & II

This course is designed to teach procedures that turn data and words into information processing. Options for the introduction of integrated software, and software used in business and industry (state of the art), could be provided for in this course.

Competencies taught:

. Manipulation of specific software packages.*
. Electronic office procedures and protocol.
. Electronic process skills (i.e., electronic mail, filing, calendaring/scheduling, document transfer).
. Workflow, processes and procedures on a local area network, in a computerized office, and in a traditional office.
. Performance of office support services.
. Work efficiency and productivity.
. Awareness of desk top publishing techniques.
. Spreadsheet skills.
. Database skills.

Credit for computer literacy is encouraged by specific competency matching of common curriculum goals.
Bookkeeping/Recordkeeping

This course is designed to teach bookkeeping/recordkeeping skills with financial records for the office support position. Maintaining financial records, along with interpreting and analyzing them is the major focus of this course.

Competencies taught:

- Application of business math skills.
- Complete invoicing.
- Making bank deposits and statement reconciliation.
- Preparation of bookkeeping/recordkeeping forms.
- Computation of payroll, petty cash handling.
- Transferring information from a source document to a permanent record.
- Concepts of receipts, payments, sales and purchases.

Credit for math is encouraged through competency matching of common curriculum goals.

Cooperative Work Experience

Work experience in the office systems cluster is set up to form a partnership between business and the high school program to reinforce and enhance the skills learned in cluster courses.

Procedure:

- The office systems instructor and employer outline individual student's responsibilities.
- A training agreement is signed.
- Job experiences are coordinated with classroom instruction and on-the-job activities.
- A training plan is developed for each student which details tasks to be learned on the job.
- The employer, student, teacher and parents/guardians sign all agreements.
- Refer to 2+2 Data Base for career and course competency comparisons (see sections on page 25).
APPENDIX J

TABLES SHOWING TOTAL QUESTIONNAIRES
RETURNED BY GROUPS AND RESPONSE

FREQUENCY OF CATEGORIES
TABLE 24
TOTAL NUMBER OF RETURNED QUESTIONNAIRES
BY OCCUPATIONAL CATEGORY

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>249</td>
<td>87.4</td>
<td>88.0</td>
</tr>
<tr>
<td>Principals</td>
<td>8</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>Vice Principals</td>
<td>13</td>
<td>4.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Curriculum Supervisors</td>
<td>13</td>
<td>4.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td>.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>285</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

TABLE 25
TOTAL NUMBER OF RESPONDENTS
BY VOCATIONAL DISCIPLINE

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>12</td>
<td>4.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Business Studies</td>
<td>41</td>
<td>14.4</td>
<td>15.1</td>
</tr>
<tr>
<td>Home Economics</td>
<td>35</td>
<td>12.3</td>
<td>12.9</td>
</tr>
<tr>
<td>Trade and Industry</td>
<td>91</td>
<td>31.9</td>
<td>33.6</td>
</tr>
<tr>
<td>Other</td>
<td>92</td>
<td>32.3</td>
<td>33.9</td>
</tr>
<tr>
<td>Missing</td>
<td>14</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>285</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
### TABLE 26
TOTAL NUMBER OF RESPONDENTS
BY TEACHER CLASSIFICATION

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teach Voc Tech Subject</td>
<td>140</td>
<td>49.1</td>
<td>50.7</td>
</tr>
<tr>
<td>Teach Related Academic</td>
<td>110</td>
<td>38.6</td>
<td>39.9</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>26</td>
<td>9.1</td>
<td>9.4</td>
</tr>
<tr>
<td>Missing</td>
<td>9</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>285</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

### TABLE 27
TOTAL NUMBER OF RESPONDENTS
BY TEACHER CERTIFICATION

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained</td>
<td>220</td>
<td>77.2</td>
<td>79.7</td>
</tr>
<tr>
<td>Untrained</td>
<td>56</td>
<td>19.6</td>
<td>20.3</td>
</tr>
<tr>
<td>Missing</td>
<td>9</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>285</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>TABLE 28</td>
<td>TOTAL NUMBER OF RESPONDENTS BY TEACHING AND ADMINISTRATIVE EXPERIENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Valid Percent</td>
</tr>
<tr>
<td>1-5 Years</td>
<td>41</td>
<td>14.4</td>
<td>14.6</td>
</tr>
<tr>
<td>6-10 Years</td>
<td>54</td>
<td>18.9</td>
<td>19.3</td>
</tr>
<tr>
<td>10 Plus Years</td>
<td>185</td>
<td>64.9</td>
<td>66.1</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>285</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 29</th>
<th>TOTAL NUMBER OF RESPONDENTS BY INDUSTRIAL AND BUSINESS EXPERIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>1-5 Years</td>
<td>77</td>
</tr>
<tr>
<td>6-10 Years</td>
<td>55</td>
</tr>
<tr>
<td>10 Plus Years</td>
<td>49</td>
</tr>
<tr>
<td>Missing</td>
<td>104</td>
</tr>
<tr>
<td>Total</td>
<td>285</td>
</tr>
</tbody>
</table>
### Table 30

**Total Number of Respondents by Age**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-26 Years</td>
<td>19</td>
<td>6.7</td>
<td>6.7</td>
</tr>
<tr>
<td>27-36 Years</td>
<td>96</td>
<td>33.7</td>
<td>34.0</td>
</tr>
<tr>
<td>37-46 Years</td>
<td>131</td>
<td>46.0</td>
<td>46.5</td>
</tr>
<tr>
<td>46 Plus Years</td>
<td>36</td>
<td>12.6</td>
<td>12.8</td>
</tr>
<tr>
<td>Missing</td>
<td>3</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>285</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

### Table 31

**Total Number of Respondents by Gender**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>161</td>
<td>56.5</td>
<td>56.7</td>
</tr>
<tr>
<td>Female</td>
<td>123</td>
<td>43.2</td>
<td>43.3</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>.4</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>285</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
REFERENCES


Oregon Department of Education. 1990. Office systems: Competency based program content standards for office occupations. Salem, Oregon: State Department of Education.


Report of the cabinet appointed committee to examine the content, organization and administration of technical and vocational education in secondary schools. 1984. Port-of-Spain, Trinidad.


